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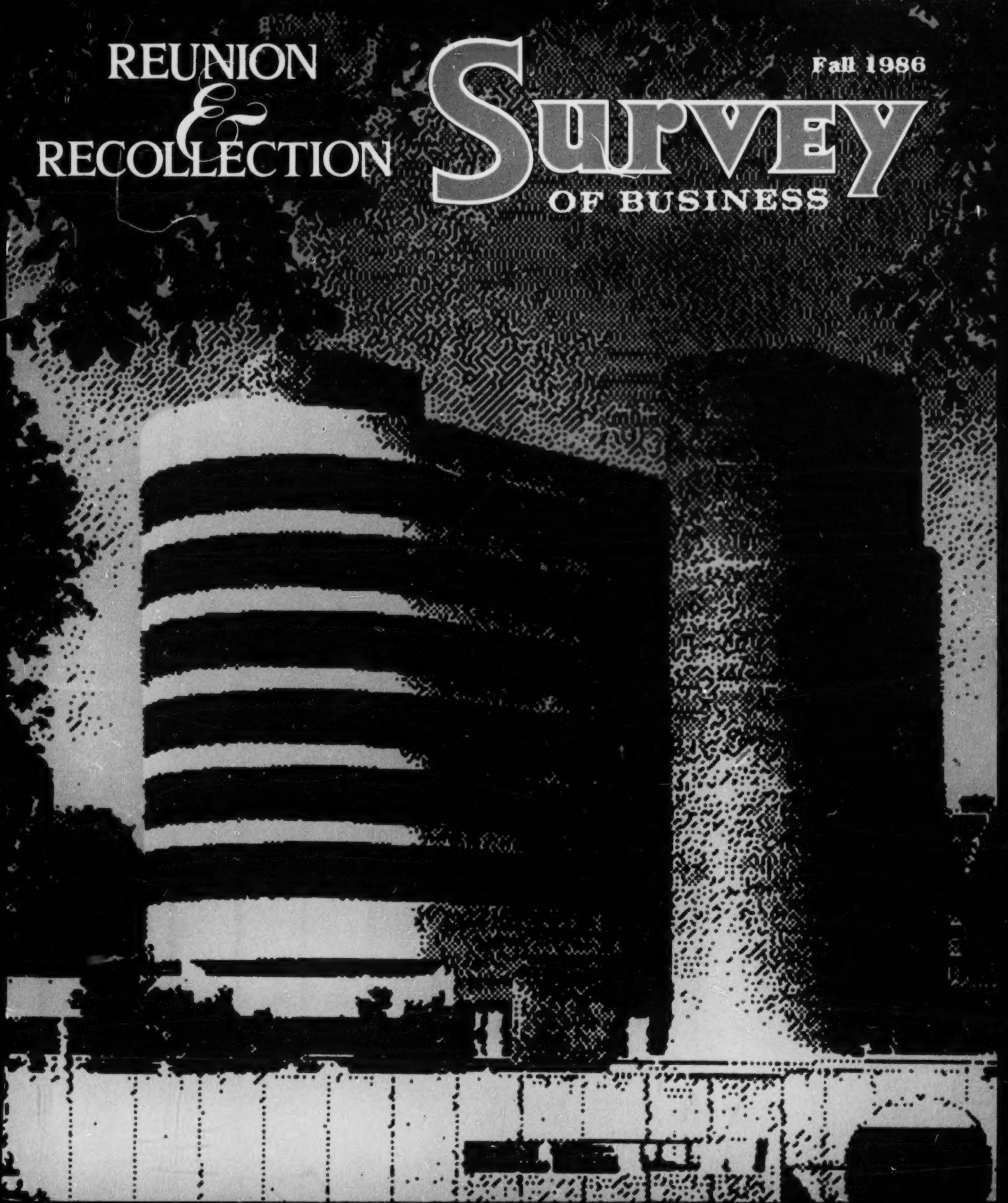
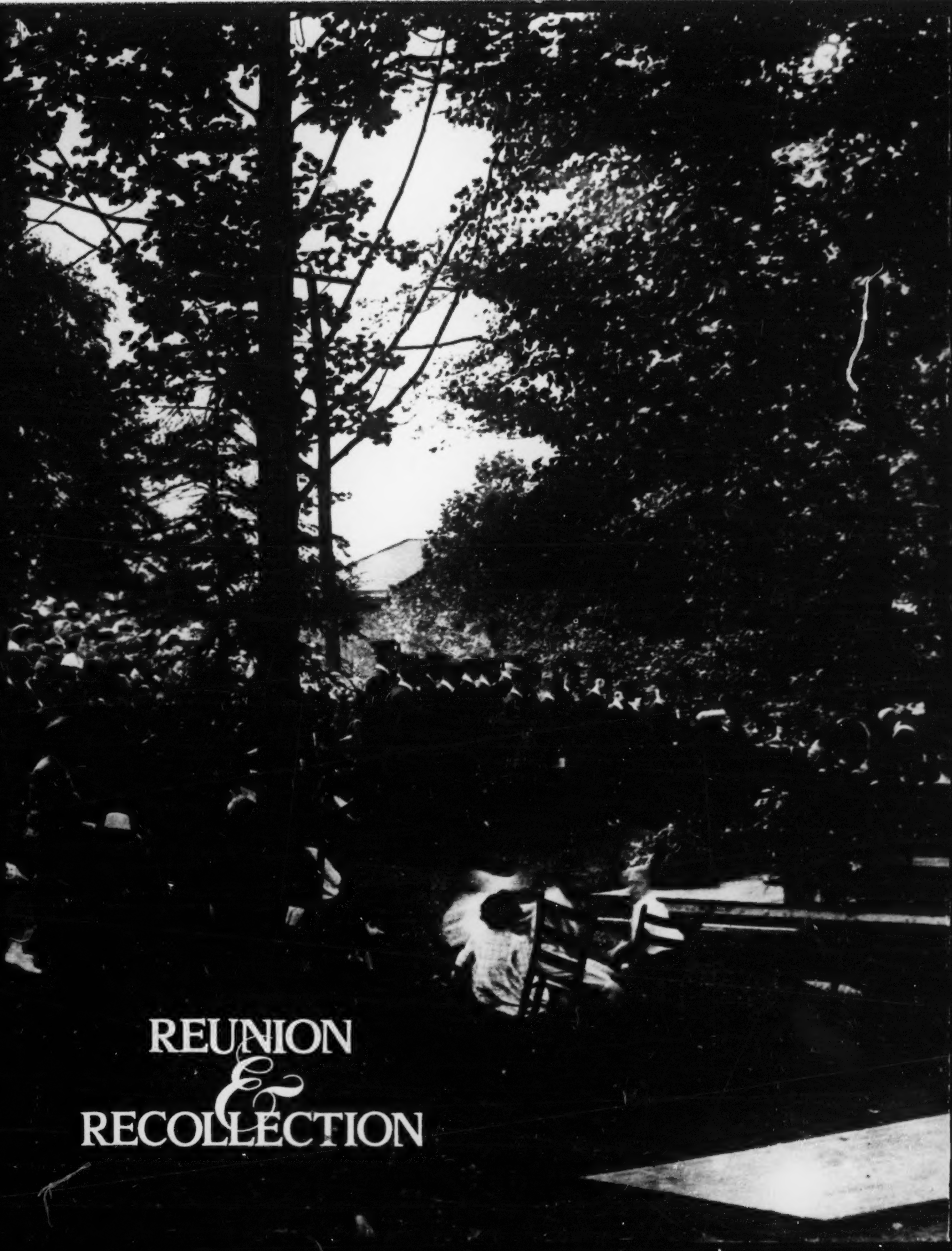
REUNION & RECOLLECTION

Survey OF BUSINESS

Fall 1986





REUNION & RECOLLECTION

The University of Tennessee
Fall 1986
Volume 22 Number 1

Survey OF BUSINESS

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College of Business Administration

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THE AUTHORS

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The editor wishes to acknowledge the contribution to this issue of Ms. Joan Strong, Editorial Assistant, who, through tireless research, accumulated information and photographs which have vastly enriched this edition of the magazine. Our thanks also to Special Collections and the McClung Museum.

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Letter from the Dean

This year, 1986, is Homecoming year in Tennessee. Joining in the spirit of this twelve-month celebration, the UTK College of Business has dedicated this issue of the **Survey of Business** to that theme. In a family, homecomings or reunions necessarily link past, present and future. These pages reflect a similar institutional linkage.

Over the years, brief thumbnail sketches of the history of the College have been prepared, but none is nearly as comprehensive and insightful as the piece which leads off this issue. Professor Emeritus Allen H. Keally is supremely qualified to undertake this effort, since his dedicated service to the College as a faculty member, department head, and associate dean spanned portions of all of four decades. A similar essay by Drs. David A. Hake, Director of the Center for Business and Economic Research, and Kenneth E. Quindry, Professor Emeritus, looks at a long history of interaction with state government as faculty and staff have carried on the research mission of the College.

Of course, the *raison d'etre* of an educational organization is its students. We have also focused in these pages on the lives and careers of a number of our graduates. In so doing we have sought especially to learn what their UTK experience meant to them. Finally, we have asked the leadership of the academic departments and other administrative units to describe where they are now and where they are going.

Knowing that the essence of Homecoming is not represented by articles in the **Survey**, but rather people in touch with people, the College is sponsoring this year its first full-fledged "reunion". On occasion in the past small receptions have been held just prior to the homecoming football game. This year a half-day event is scheduled for Friday, November 7th, before the Homecoming game on Saturday. Activities include a luncheon, an address by alumnus John Cranor, President, Pepsi USA Food Service, afternoon small group discussions with a number of our faculty members, and a reception. As this is written we are hoping for an excellent turnout for the reunion—and the faculty, staff and administration of the College look forward to seeing many of the alumni readers of this **Survey** on November 7th. If the reunion proves successful this year, our alumni can be sure that a similar event will be arranged for 1987, and this year's homecoming spirit will stretch into the years to come.

C. Warren Neel, Dean

The Special Class of 1919 included the first business students.

Where We Came From . . .

A History of the College of Business Administration

A. H. Keally

Nearly 75 years ago, the seed was sown from which the College of Business Administration has evolved. In 1913, Dr. Theodore W. Glocker, employed as a Professor of Economics and Sociology in the College of Liberal Arts, was assigned by University President Morgan B. Ayres to develop and teach courses in business.

When Dr. Ayres recommended the creation of a School of Commerce in 1914, Glocker, trained at Johns Hopkins, became its head. Later, of course, the school became a college, and an important arm of the University. Glocker was known as a successful and aggressive leader, identified as belonging to an expanding group of "academic imperalists who built their units into significant operations."[1]

In the fall quarter of 1914, the University catalogue, **The U.T. Record**,[2] contained course listings in Corporate Finance and Money and Banking under the rubric of the School of Commerce. There was an initial enrollment of 11 students, a figure which had expanded to 36 by 1918.

In 1916-17, two professors of the School of Commerce, Glocker and Harry H. Clark, appeared in the catalogue, and courses were listed in Economics, Labor Problems, Life Insurance, Public Finance, Money, Banking, Business Organization, and Business Management.

An additional two faculty members were hired by 1921, and programs in Accounting, Marketing, and Factory Management had been added to the curriculum.

By 1923-24, student enrollment had climbed to 251. Professor Harvey Meyer joined the staff in 1924 and subsequently became the head of a growing and successful program in accounting.

Assistance for the State

Prior to 1928, the governor of Tennessee, Harvey Horton, had expressed an interest in reform of the state tax system and had looked to the University for assistance. Finding no one aboard with qualifications in taxation and public finance, Dr. Glocker hired Dr. Charles P. White from the University of Pennsylvania's Wharton School at $3,500 per year, which in

A. H. Keally

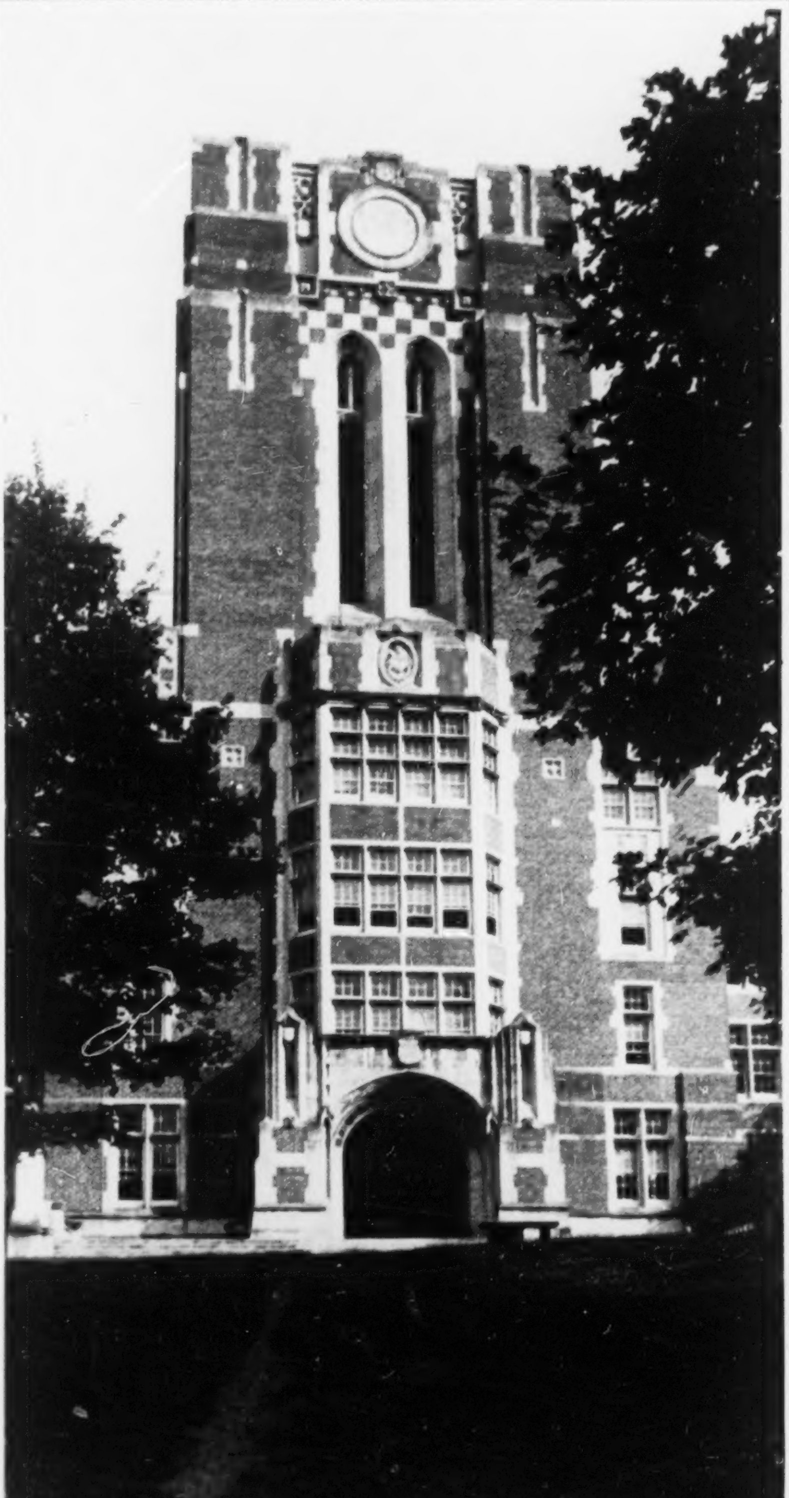
1928 was considered a generous University-wide salary. Dr. White, hired as Associate Professor of Finance, was given a six-quarter hour teaching load as opposed to the standard twelve. In return, he was designated to meet the state's demands for research in taxation and fiscal policy.

In 1930, Dr. Frank B. Ward joined the faculty as Head of the Economics Department. In that year, W. H. Read was hired in Accounting and subsequently became the University system's Vice President for Business and Finance, while Dr. Ward later went on to become Dean of the College of Business Administration.

By 1932-33 enrollment in the School had reached 236, only 11 of whom were females.

Continued Expansion

The School continued to expand. In 1934-35, Dr. Glocker formed an alliance with Dean Ferris and Professor W. R. Woolrich of the College of Engineering to set up a program in Factory Management. Two courses listed under that title were taught by Professor Woolrich. Rounding out the program were courses in Office Management, while Foremanship Training and Job Analysis were taught by Professor Clyde Hubert Wilson of the Industrial Education Department, and Personnel Administration was taught as Psychology 342 by Professor Ralph Emerson Dunford.



Ayres Hall

Turner House

This program was a classic maneuver by Dr. Glocker to obtain a desired program in the face of a shortage of resources, since the curriculum in Factory Management was taught by Professors from the College of Liberal Arts, Engineering, Education, and the School of Commerce. Presumably, the additional costs were negligible, since the students, as long as they remained relatively few in number, could be absorbed into existing classes containing other students from the other colleges.

In 1936, the enrollment in the School was 351, of whom 29 were women. (This represented an increase in female enrollment from 4 percent in 1932 to 8 percent in 1936.) In pursuit of Dr. Glocker's wish to continue services to the state on tax matters and to expand service to other government agencies such as TVA, as well as to the private sector, the Bureau of Business and Economic Research was established in 1937, with Dr. C. P. White as its head.

Theodore W. Glocker

The next year the name of the School was changed from the School of Commerce to the School of Business Administration.

Forging Alliances

Another example of Dr. Glocker's ability to forge alliances in order to create new programs appeared in 1939. New programs – Business Education and Distributive Education – appeared "in cooperation with the College of Education." Also added was Secretarial Science, which was renamed Office Administration in 1940. Again, the total costs of the program were minimized by grafting these new offerings onto existing ones and the unit costs kept low by joining students from two colleges and three programs into single classes.

Statistics and Transportation and Public Utilities were additional courses added to the School in 1939.

The peak prewar enrollment of 622 students was reached in 1940. The first description of a cooperative program for business students appeared in the **Record** in 1942. Students were permitted to earn up to 18 quarter hours by working for three months in business and maintaining three months in residence at the University. This program was widely used in the 1940's and 1950's primarily by students in Accounting and in Industrial Management. Arrangements for cooperative programs were made with all of the large public accounting firms and many of the smaller ones. For Industrial Management students, many Tennessee manufacturing firms offered cooperative opportunities.

In 1944, a war year, enrollments in Business Administration fell to a low of 307 because of the military service of college-age men, and the ratio of women to men began to grow closer. In that year 208 women were students in business.

Explosive Growth

At the end of World War II, in the 1945-46 school year, enrollment in Business Administration spurted to 1045. William Way, Jr., joined the faculty as Associate Professor of Trans-

After WWII, trailers were set up on the Hill to accommodate the quadrupled student enrollment.

Frank B. Ward

Arthur E. Warner

portation and initiated the explosive growth of a major in that area to one of the largest in the College.

Dean Ward's administration was one of fleshing out the manpower of the departments to meet the needs imposed by the post World War II bulge in enrollments. It might well be described as a period of consolidation of the gains made in the late '40's, a period of adjustment rather than one of rapid change.

The year 1947 was a banner year in many senses for Business Administration. Under the aegis of Dr. C. E. Brehm, acting President of the University, the School became a College, with Dr. Glocker as Dean. A member of the American Assembly of Collegiate Schools of Business since 1941, the College gained accreditation in 1947 from that group. Enrollment leaped to more than 2100, a figure exceeding two-thirds of the total number of regular students at the University in Knoxville ten years earlier.

Department of Journalism

Prior to 1947 the catalogue had carried a listing of "Preparation for Journalism" under the College of Liberal Arts, a program containing a substantial concentration in English. In pursuit of his aggressive "imperialism," Dean Glocker established a Department of Journalism in 1947, thereby co-opting this idea. The program was initially headed by Professor Julian Harriss, who was succeeded a year later by Professor Willis Tucker. Journalism remained a department in the College of Business Administration until 1958, when it became the School of Journalism, with Professor Tucker as director. The School of Journalism remained in the College until 1968, was separated as an independent operation in 1969, and in 1970 became the College of Communications.

Dean Glocker retired in 1951 after a University association of 37 years. He had seen the School of Commerce grow from an initial enrollment of 11 students to an accredited College of Business Administration with almost 1400 students.

Construction of the Glocker Building

In the latter years of his administration, Dean Glocker had fought hard for a building to house his faculty and classes. Faculty offices were scattered from Ayres Hall to various temporary wooden buildings erected during the war, and classes were held from Ayres Hall to Ferris Hall in the same wartime buildings. In the latter years of his administration, a building was authorized by the Board of Trustees, and in 1952, the College moved into new quarters, which was named Glocker Business Administration Building.

From the vantage point of 1986, it is clear that Dean Glocker's years were years of course and curriculum development, of expansion of the original offerings in Finance and Economics to such subjects as Factory Management and Office Administration. He accomplished his plans with a flair for forming alliances with other colleges to provide joint programs and with a cadre of full-time staff members supported by a number of part-time people.

In 1951, an M.S. program in Industrial Management was instituted, and as an innovation, classes were offered at night in order to attract students from local industries and from TVA. This idea worked particularly well in attracting minors from the various engineering programs. In 1953, a totally new night M.S. program in Industrial Management was inaugurated at Oak Ridge. Eventually, it became the largest graduate program at Oak Ridge and remained so for many years.

Plant Supervisory Programs

In response to local industry's demand for help in plant supervisory development programs, Professor David MacKenzie Faulkner was added to the staff for this specific purpose, conducting specially designed programs in plants from Kingsport to Chattanooga. This effort was made to meet the demand for Executive Development

CBA OUTSTANDING TEACHING AWARDS

OUTSTANDING TEACHER AWARDS	
1969	S. Kyle Reed
1970	H. Alan Lasater
1971	John B. Ross
1972	Dean Drewry
1973	Edwin P. Patton, Jr.
1974	John W. Philpot
1976	Richard L. Townsend

Ed. Note: After 1976, outstanding teaching was recognized by the John B. Ross award and in 1978, the A. H. Keally Award for Junior Faculty was established.

JOHN B. ROSS AWARD (For Senior Faculty)	
1977	Donald L. Stevens
1978	J. Fred Holly
1979	John M. Wachowicz, Jr.
1980	Roger L. Jenkins
1981	Joseph L. Frye
1982	S. Kyle Reed
1983	Hans E. Jensen
1984	John W. Philpot
1985	Jan R. Williams
1986	James M. Reeve

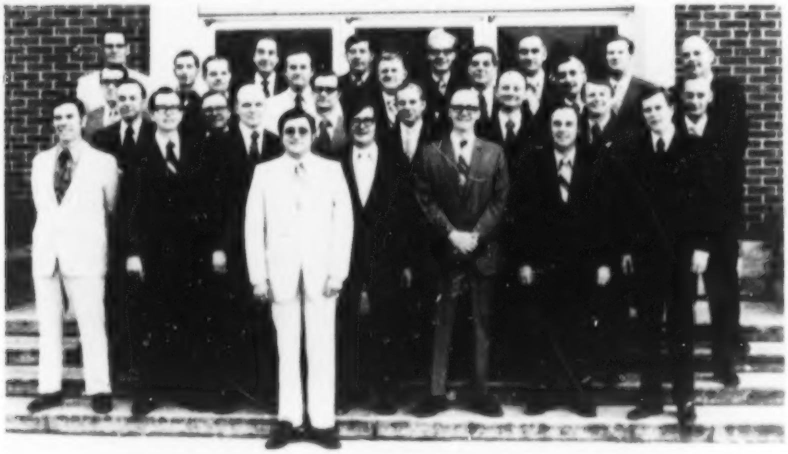
ALLEN H. KEALLY AWARD (For Junior Faculty)	
1978	John M. Wachowicz, Jr.
1979	Roger L. Jenkins
1980	Fredric L. Barbour
1981	John M. Mogab
1982	Sophronia W. Ward
1983	James M. Reeve
1984	Laurie A. Stulberg
1985	Mikel G. Tiller
1986	Kenneth C. Gilbert

Programs, several of which were designed on an individual basis and conducted at Wheland Foundries in Chattanooga, Union Carbide Corporation, and Oak Ridge Associated Universities. Each program involved large numbers from the Management Department, but some also included staff members from accounting, economics, business law, transportation and marketing.

During the same period of time, programs for the managers of TVA Cooperative Utility Distributors were held in Knoxville, Nashville and Starkville, Mississippi. These programs, plus those presented to groups of managers in the transportation industry, were the forerunners of the current Executive Development Programs and were offered as a result of a deliberate decision that the College should fill a role in supervisory and executive development, but on a self-supporting basis. They were priced either on the basis of repaying the professors' salaries

In 1952 Glocker became the first permanent home of the College of Business. L to R are Governor Gordon Browning, Dean Ward, and University President C.E. Brehm

John B. Ross



THE FIRST TENNESSEE EXECUTIVE DEVELOPMENT PROGRAM
1972 CLASS

Center Front: James C. Cotham, III, Director **Front Row**: Douglas W. Coulter, William S. Cope, William G. Adams, [illegible] Oliver, James M. Crews, Jr., Leonard L. Runyan, Robert J. Young **Second Row**: C. Whitney Ozier, Ella W. Bowers, Irving E. Trawick, F.D. Houston, III, H. Virgil Stephens, Donald R. Williamson, Robert A. Mize **Third Row**: Noel Douglas Barton, Frank R. Crownover, William A. Fortune, George W. Anderson, William M. Dempster, W. Crew Anderson, Frank B. Miller **Fourth Row**: Harold W. Anderson, K. Harrison Brown, James A. Jobe, George Herbert Cureton, John P. Moon, George S. Morgan, Clarence E. Lindsay **Not Pictured**: Bill G. Williams

**DEANS
U.T. COLLEGE OF BUSINESS ADMINISTRATION
(Years of Service)**

**Theodore Wesley Glocker
Professor, Director, Dean
1913-1951**

**Frank Bird Ward
Professor, Dean
1929-1964**

**Arthur Eugene Warner
Professor, Dean
1964-1972**

**John Bayha Ross
Professor, Dean
1957-1976**

**C. Warren Neel
Professor, Dean
1969–**

to the department where they were conducted as part of their workloads (plus overhead), or they yielded adequate hourly pay where conducted as additional loads.

The First Ph.D.

The first doctoral program in the college was begun in the Department of Economics in 1960, and in 1964 an intercollegiate master's and doctoral program was established jointly by the Department of Industrial Management and the Department of Psychology. The Industrial Psychology program in the latter department was languishing, and there was an increasing demand in colleges of business for staff members in Organizational Behavior. The doctoral program was specifically designed to provide graduates with an academic base as psychologists, and at the same time to give them a background in management which would add to their credentials in the marketplace. There was also a growing demand for students in organizational behavior in business and government employment, where departments of personnel were building staffs in personnel research and organizational behavior.

In 1966, a program in Management Science was added to the curriculum in order to meet a need for an increasing demand for the application of quantitative methods to business. The program consisted of courses leading to the M.S. and Ph.D. degrees at the graduate level. At the undergraduate level, opportunities were provided for Management Science Options in the various major fields. The requirements in mathematics, statistics, and computer science were substantially expanded for the students enrolled in this option.

Enrollment Expands

Enrollment, meanwhile, had been growing rapidly and by 1969 exceeded 4200, with graduate students numbering in excess of 350. Numbers of staff had grown to the point where some of them were quartered in other buildings on the campus, including a number of formerly private houses.

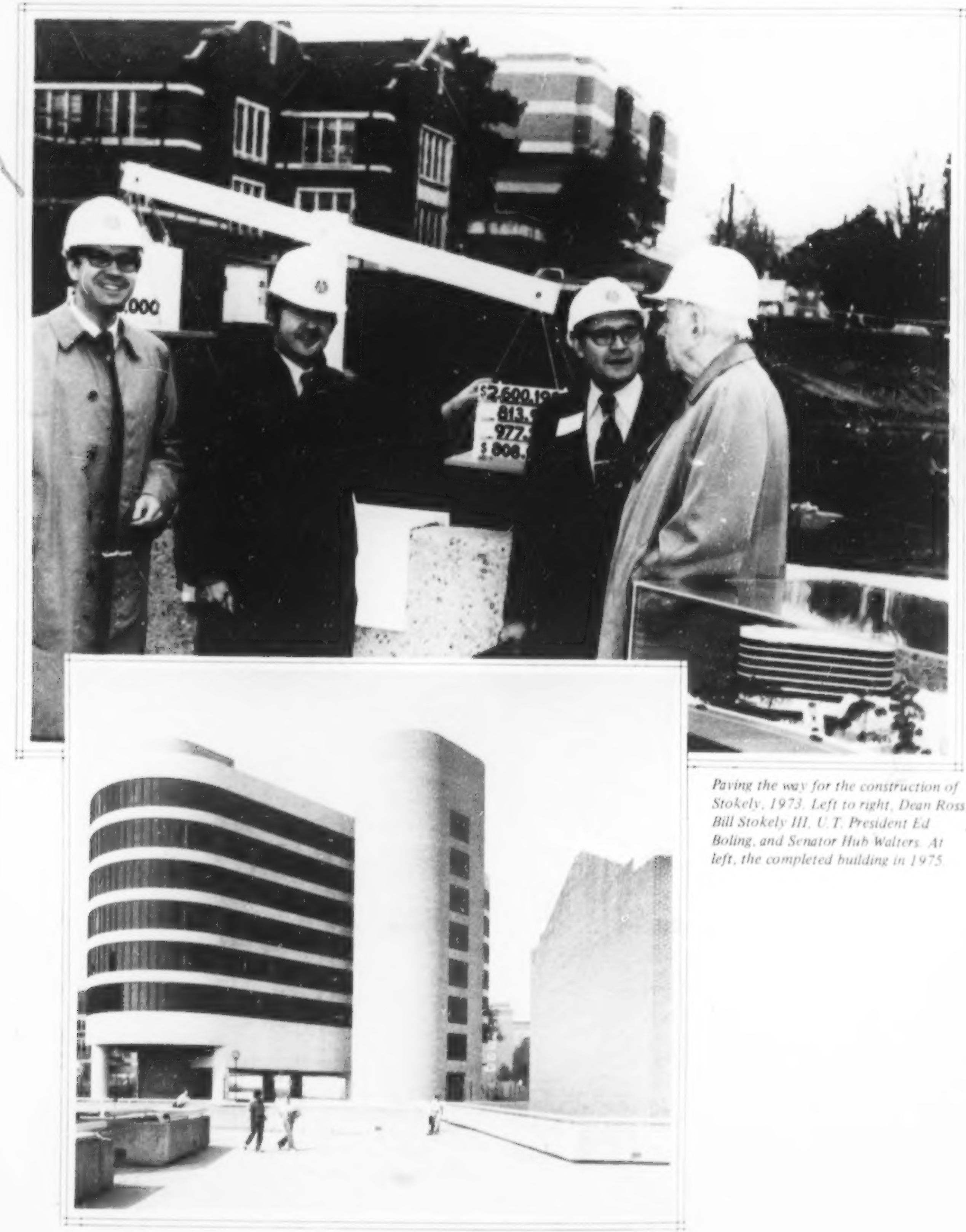
In response to the pressure for more space for both offices and large lecture rooms, the University set up the "Partnership for Achievement Program" of capital giving, chaired by William B. Stokely, III. This group managed to raise, from a wide variety of business and private sources, some $3,000,000. Implicit in the request for contributions was a commitment by the College to establish programs for management education. As a consequence, Dean Warner established the Management Development Programs Office in 1971, and the first of a continuing series of Tennessee Executive Development Programs was conducted in that academic year.

Out of this small beginning (in which two programs were conducted with 58 participants and an income of $55,500) has grown a very substantial operation which in 1986 consisted of 58 programs, with 2,047 participants and revenues of almost $5,000,000.

The M.B.A. Program

A fourth doctoral program, that of Doctor of Business Administration, was added in 1972. This action coincided with the end of the administration of Dean Arthur E. Warner, whose eight-year administration was characterized

A. H. Keally



Paving the way for the construction of Stokely, 1973. Left to right, Dean Ross, Bill Stokely III, U.T. President Ed Boling, and Senator Hub Walters. At left, the completed building in 1975.

1986 U.T. M.B.A. Team, first in the Southeast, from l. to r., Kevin Janiga, Mike Knaff, Dee Mallinack, Jim Gill, and Andy Streetman.

by rapid and fundamental changes and by controversy. The M.B.A. program was introduced over the objections of those with a vested interest in, or intellectual commitment to the M.S. The Bureau, renamed the Center for Business and Economic Research, became a major factor in encouraging research and writing on the part of faculty members. Two new Ph.D. programs and the D.B.A. program were instituted.

In 1972, Dean Warner was succeeded by Dr. John B. Ross, who had served as head of the Accounting and Business Law Department for a number of years. Dean Ross continued to support the ongoing graduate programs as well as the continued planning for a new building which was to be financed partially from the Partnership for Achievement Program.

In 1975, this $4,500,000 building, the William B. Stokely Center for Management Studies, was completed. It contains seven floors and on two levels houses the University Computing Center. Remaining floors contain lecture rooms and faculty and administrative offices as well as a conference area which is in almost continuous use for Executive Development Programs.

Advisory Committee Formed

In this same year, an Advisory Committee to the Dean was created. Its membership consists of a group of business leaders from across the country who meet with the Dean from time to time to discuss issues facing education for business. The mutual advantages of this kind of interplay are obvious, and the Advisory Committee has been of great value to the College.

The term of Dean Ross was regrettably short because of his untimely death, but like Dean Ward's, it was characterized by a period devoted to absorbing and building upon the initiatives taken by Dean Warner.

Dr. C. Warren Neel succeeded Dr. Ross as dean in 1976. In the 1970's, many undergraduate students in the College of Liberal Arts, looking for entry-level job skills in business, were taking scattered courses in Business Administration. In an attempt to bring some order into this situation, the College instituted a business minor for non-business majors in 1979. The minor consisted of 36 quarter hours of coursework, including 21 in economics, accounting, and statistics at the sophomore level.

Despite major new gifts to the College as part of the Tennessee Tomorrow Campaign, Dean Neel continued to feel the pressure of expanding enrollment despite expanding resources. To meet this problem, the dean and the faculty of the College proposed to the administration and the Board of Trustees that admission to the Upper Division Programs of the College be restricted. The Board approved the "Administered Enrollment" plan in 1980 and its description appears in the 1981-82 **Record**. The introductory statement reads: "Admission to the Upper Division Programs of the College is competitive and is based on the space available in the College." This statement is followed by a listing of the criteria used for determining admissions eligibility after the completion of 84 quarter hours of coursework.

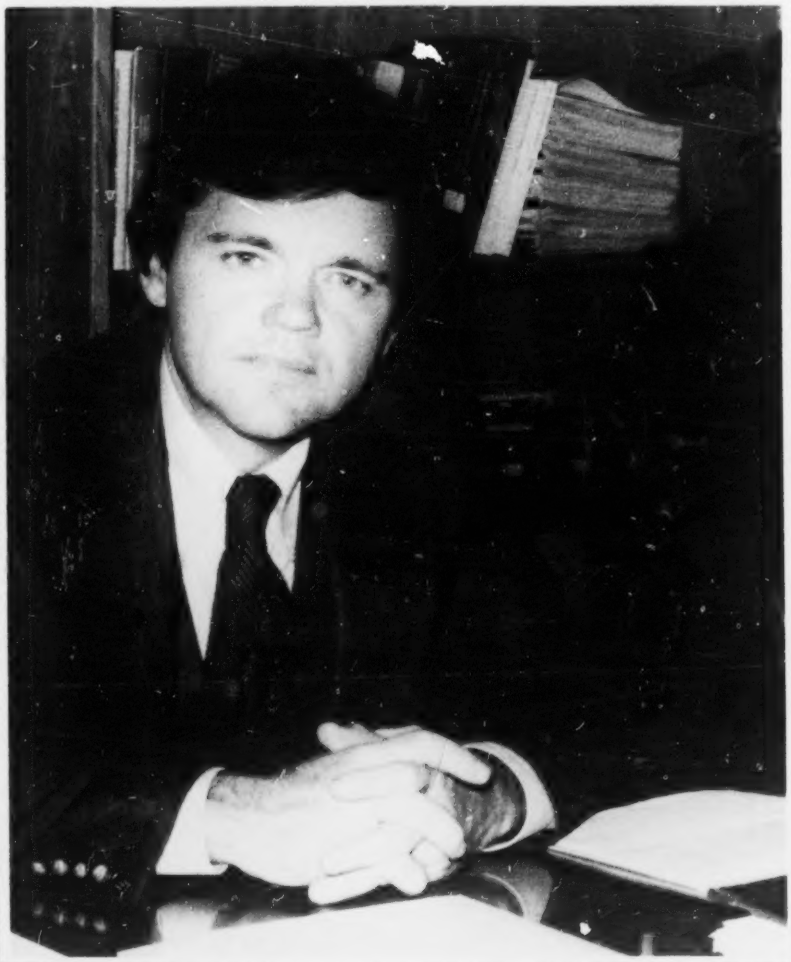
The New Technology

The most recent development of great consequence in the College has been the purchase of some 270 I.B.M. microcomputers. Present plans are to increase the number of workstations to more than 500 over a three-year period. The recognition that computers would play a major role in education for business goes back to the first year in which the University acquired a computer 1961. In that year Dr. R.H. Boling, Professor of Industrial Management, developed a computer simulation involving all the phases of a company operation, including production, inventory control, R & D spending, marketing, advertising, cash flow, etc. The simulation became an integral part of an introductory management course. A variation of it, containing a continuous upgrading in sophisticiation, has been used by Dr. Boling in the Tennessee Executive Development Programs since its inception in 1972, all in cooperation with the University Computing Center.

In terms of numbers of students, the School of Commerce, later the

College of Business Administration, has followed the four stages of the typical s-curve, the law of industrial growth: to begin with, small numbers, increasing slowly, up to World War II; second, a very rapid rate of growth following the war, based upon the demand and educational opportunities provided by the G.I. Bill; third, a decreasing rate of growth in the late 1970's, associated with demographic changes in the college student age group, plus the burgeoning of junior colleges and other state institutions of higher learning; fourth, stability; and then, declining numbers in the 1980's, growing out of changes in admission requirements to the upper division of the College as well as the influences cited above.

The first computer at The University of Tennessee Computing Center, an IBM 1620, was installed in 1961. Below, students work in one of the new personal computer laboratories in Glocker.



C. Warren Neel, Dean

The total program involves the installation of labs, the training of faculty and staff, the provision of support services by a growing Computer Resources Group in CBER, the acquisition of personal computers, and the injection of the use of the computer into more and more of the curriculum.

Overview

What has been outlined here is the evolution of a large and important segment of The University of Tennessee from a joint professorship in Economics and Sociology in 1913 with two courses and an initial enrollment of 11 students to a College with over 3,000 undergraduate and graduate students. There are more than 100 faculty members, several hundred courses, and six departments. But numbers say nothing about quality, nothing about leadership, nothing about innovation.

Current Activities

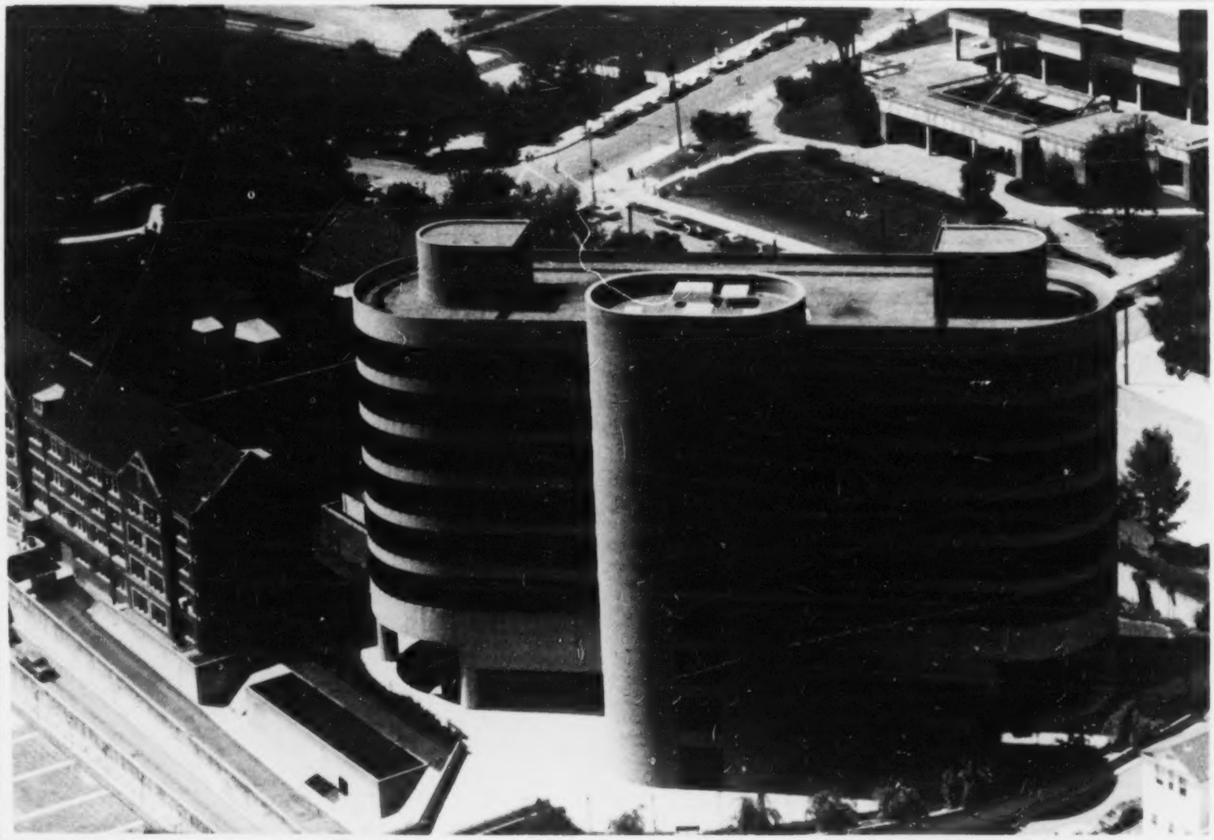
The current administration of Dean Neel, in which Associate Dean John R. Moore has played a particularly active role, is again characterized by major changes. Management Development Programs in themselves have become an enterprise of substantial size. External Affairs, involving relationships with the business community, continue to receive increasing emphasis. Raising funds for professorships and other supporting activities has been an outgrowth of these self-reinforcing ventures, a sort of synergy devoutly to be desired.

In addition, the advent of the microcomputer and standardized software programs have made possible the microcomputer acquisition program of the College. New M.B.A. students were required in 1985 to come to the campus one week early for an intensive introduction to the IBM PC and a variety of software packages. The teachers of first-quarter courses integrated the use of the computer into their classes, and students were eventually using them an average of 12 hours a week.

For a long time, the College was plagued with the fundamental economic problem of spreading scarce resources over insatiable demands. Failure to seize opportunities was not so much a question of lack of imagination as lack of means. In recent years, and this appraisal is obviously arguable and subject to the bias of the author, the major events which brought the College into the modern world were these:

1. The establishment of the M.B.A. program in 1966
2. The decision to "grow" the Bureau of Business and Economic Research into the CBER in 1967
3. The establishment of the Management Development Programs Office in 1972. (It is impossible to overstate the role of this activity in contributing resources to other developments in the College.)
4. The creation of the Advisory Board to the Dean, made up of a number of important business leaders
5. The installation of the Administered Enrollment Plan in 1980, thereby limiting enrollment in the upper division of the College to those students who met certain criteria after having completed 84 quarter hours of coursework
6. The inauguration in 1985 of a program to install over 300 microcomputers over a three-year period, together with the appropriate supporting staffs, and monies to support the development of computer-based instructional materials.

One final note. It is clear that a College, like a society, is not created one time and then permitted to remain static. A College is an open system; it operates in a changing environment, and it behooves its deans, directors, faculties, and staff to recreate it on a continuing basis. If its history for the past 20 years is any indication of the future, the next 20 years for the College of Business Administration should continue to be memorable.



A. H. Keally, author of this history of C.B.A., joined the faculty in 1948, became head of Industrial Management in 1951, was Associate Dean from 1965-1969, and retired in 1977. He was the recipient of a University Outstanding Teaching Award in 1971. Upon his retirement the A.H. Keally Award for Junior Faculty was established.

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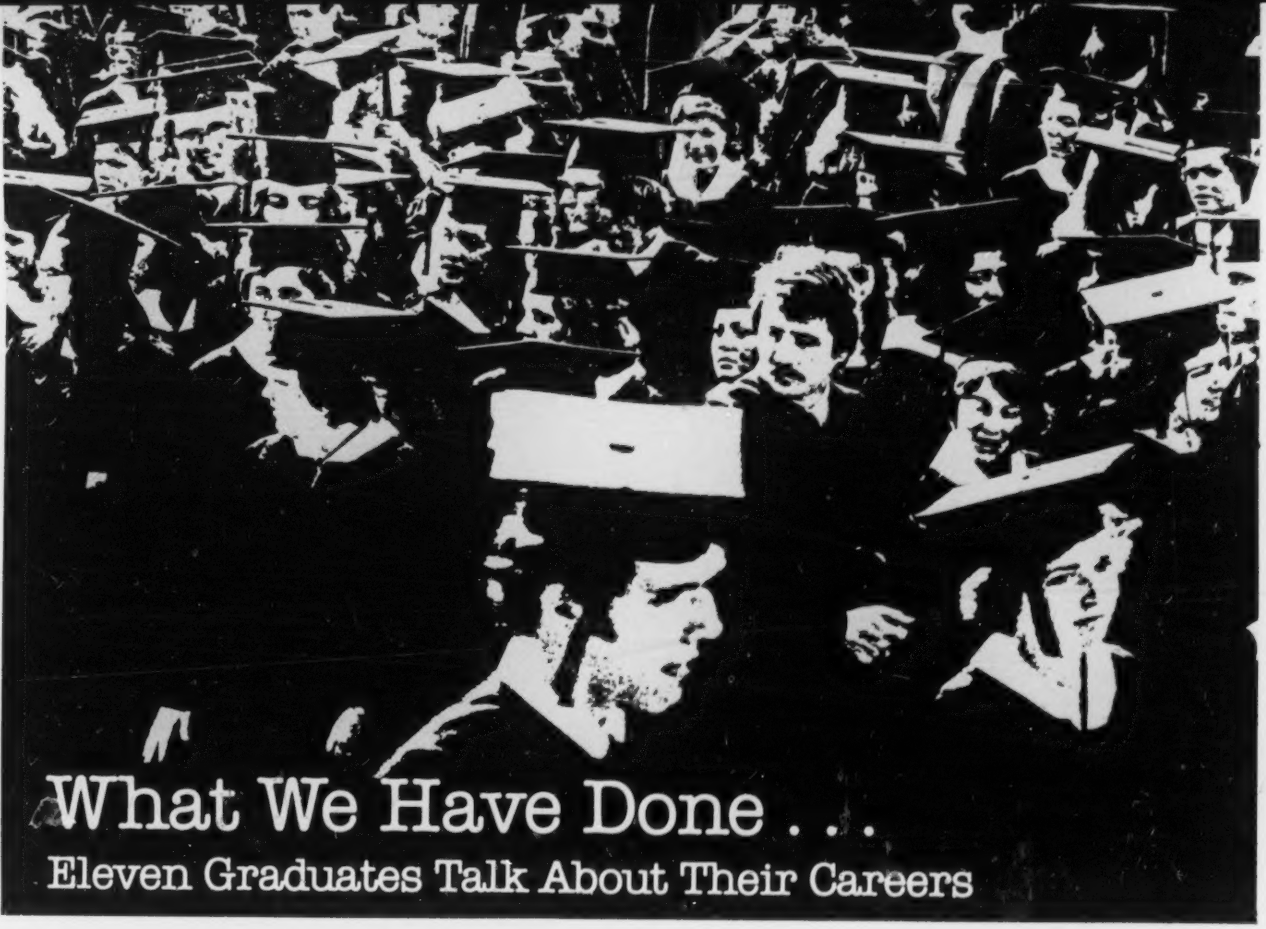
1. James Riley Montgomery, Stanley J. Folmsbee, and Lee Seifert Greene, *To Foster Knowledge: A History of the University of Tennessee, 1794-1970* (Knoxville: The University of Tennessee Press, 1984), p. 197.
2. The University catalogue, *The U.T. Record*, may be consulted for verification of names and dates used throughout this article.



What We Have Done . . .

Eleven Graduates Talk About Their Careers

Jeanne P. McDonald

The eleven men and women interviewed for this article came from diverse backgrounds and followed divergent paths during their educations in the College of Business Administration. Yet they all share common qualities—good communication skills, strong academic records, a penchant for hard work, and a generous measure of resiliency. Although it was difficult to choose from among the scores of graduates who have received business degrees at U.T., those selected represent a cross-section of ages, experience, and placement on the career ladder.

One of the unexpected revelations of the interviews was the pattern of a mutual attitude among the graduates: every single one stressed his or her campus activities and the experiences connected with them as being one of the most important elements of their university experiences. That interest in human communications and verbal skills continues to this day in their business and community affiliations. All are still concerned with being not only good corporate citizens but active members of the community at large. Even those who devote extra hours and weekends to work still donate precious free time to various social, religious, and community causes and seem to thrive on interaction with other people.

Another prevailing attitude was the graduates' eagerness to praise former professors who were mentors or who assisted in various aspects of their academic careers, from job placement to simple good old-fashioned encouragement. The generosity of time and personal resources on the part of the faculty emerges as one of the strongest continuing assets of the College of Business Administration.

There were other noticeable threads and trends, not the least of which is the ascendancy of women in the work force. From pioneer Barbara Haskew, the first woman to earn a Ph.D. in economics from U.T. in 1969, to Sherry Jared, the most recent (1985) graduate, there is a strong but flexible backbone of determination. The possibility of failure is rarely a consideration; the measure of success depends on the investment of the person involved, regardless of sex. And in the case of Elise Robey Yanders, breaking the barriers of both sex and color has not slowed her down for a minute. Of course women, because of the early barriers to careers for females in the business world, have not been a part of that world for as long as men, and their preclusion until recently has also limited their numbers in top management, but all that is changing.

On the following pages the eleven graduates talk about their educations, careers, and present aspirations. The fact that many of them who are already seemingly at the zenith are looking forward to still further ventures speaks volumes about the caliber of the graduates interviewed. They have built, and are still building, impressive careers on the strong foundations of their educations, and are yet drawing blueprints for the future.

> "For those of us who earned the master's degree in the 60's, it was something above and beyond the ordinary. Now it's pretty much expected of serious business students."

BILL HENDON

U.S. Congressman, North Carolina

In 1980 Bill Hendon, who had never run for public office before in his life, resigned his position as general manager of a manufacturing company in western North Carolina and ran for Congress. He defeated Representative Lamar Gudger, to become the first Republican elected to the 11th District seat in 52 years. "When I left U.T. (Hendon earned the B.S. in business administration in 1966 and the M.S. in 1969) I told Jim Bennett, department head in Transportation, that I was going to get into government," says Hendon. "It took me 10 years, but I made it. In the late 1970's I became concerned with the course the country was taking and was swept up in the change."

In 1962 Bill had been accepted at U.N.C. in Chapel Hill and had already paid his dorm rent when he visited his brother at U.T. for the weekend and decided to stay. "In that year," he says, "Bowden Wyatt was the football coach with a team running single wing on a grass football field. That's how times have changed."

Bill recalls that he went to summer school most years. "Summers were fun and casual," he says, "and then in the fall things would get serious again, people would put on their coats and ties and get down to business. But after the summer of '68 it stayed casual; the political climate changed." At the end of that scholastic year, after earning his M.S. and teaching as an instructor, Hendon left Knoxville as Neil Armstrong and Buzz Aldren were landing on the moon.

He later taught at Western Carolina University and then took over the family business after the death of his father.

"For those of us who earned the master's degree in the late 60's, it was something above and beyond the ordinary. Getting that degree was helpful in that it gave me another couple of years to mature, to broaden my horizons, and served as another brick in the foundation of my life. Now getting the M.B.A. is pretty much expected of serious business students."

Influential Teachers

When asked who most influenced him during his college years, the Congressman, who majored in transportation and minored in marketing, replies that it would have to be Robbie Peters, homecoming queen, who subsequently became his wife. "But if you mean faculty," he laughs, "I would have to name the late Jim Bennett, and Joe Frye, Frank Hendrix, Dave Cravens, and Jim Cotham." He says that when he attended U.T. there was a great deal of emphasis on government regulation. Today there is a move away from regulation, and the world of transportation has changed drastically. "Now free market is running the industry," he says, "and that is probably the best way to go. I'm a conservative, pro free enterprise and laissez-faire, and that's the tone of this administration. I haven't changed. That type of thinking now permeates the industry."

Hendon currently serves on the House Interior and Insular Affairs Committee, the Veterans' Affairs Committee, the POW/MIA Task Force, and the Textile, Social Security, and Military Reform Caucuses. "In government," he says, "a preponderance of representatives and senators have advanced degrees. At one time I considered a combination M.B.A. and L.L.B. degree. I regret that that combination wasn't available when I was at U.T. Today I would advise business students to get the law degree either before or after the master's in business. To get the law degree along with the master's gives one the extra security of being able to hang out his shingle."

Hendon, who has a constituency of 525,000 in western North Carolina, considers all his teaching and learning experiences invaluable. "Today," he says, "I have one of the best jobs in the world." He says that he and his wife Robbie still cherish the friendships they established at U.T.

ELISE ROBY YANDERS

Financial Consultant

As an under-thirty black female, Elise Roby Yanders has broken all the stereotypical barriers in the business world. Today, she is a financial consultant for Merrill, Lynch, Pierce, Fenner and Smith, Inc. in Pittsburgh, advising and assisting both individual and corporate clients to help them meet their income, growth, and/or tax – advantaged investment objectives.

"When I started college, I never dreamed that I would be where I am today," she says. But those who knew her at The University of Tennessee – her fellow students and teachers, are not surprised. Elise is an achiever. While at U.T. she maintained a better than three-point average for four years while managing to break records as a track star. In 1979 she graduated with a degree in marketing, went to work for Xerox in Chicago and in 1982 earned the M.B.A. from the University of Illinois-Chicago in finance and marketing. While she was a senior marketing representative at Xerox, she achieved President's Club status and developed a quantity purchase program for physicians.

As a senior in high school in Chicago, Elise was awarded an academic scholarship and had her choice of schools. She selected U.T., partly because her younger brother, Mabry T. Roby III, a 1983 graduate, also wanted to attend the Knoxville campus. Among teachers who were highly supportive in Elise's college career were Drs. Richard Reizenstein, Bob Woodruff, Roger Jenkins, and Roseanne Spiro. Dr. Reizenstein in particular, she said, was influential in the classroom and in addition, took a personal interest in her career. "Also," says Elise, "getting to know Chancellor Reese made me feel like more than just a number."

"I think of my job as being like a doctor's in many respects," says Elise. "The clients tell me their history, their concerns, and the direction they want to take. I put together a financial plan based on that information and keep a close working relationship with them. It might be a corporation wanting to set up a pension and profit-sharing plan, an individual looking for tax relief, or a young executive wanting financial growth." Investment recommendations are tailored to the needs of the individual.

Elise has achieved Executive's Club status, is number one in generating new accounts for the Pittsburgh office, and has designed and implemented national investment programs for two major corporations. She is also licensed in real estate and insurance.

Making the Grade

College taught her how to think and how to juggle a busy schedule. Besides being a member of the U.T. track team for four years, she was a member of the Cultural Attractions Committee and Delta Sigma Theta Society. When Elise started her job with Merrill, Lynch, Pierce, Fenner and Smith, she was the first black female financial consultant in the Pittsburgh area. Besides having to prove herself in the field, the fact that she was new in Pittsburgh meant that she also had to develop a clientele. To achieve that end, she had to work 12-hour days five days a week and sometimes Saturdays as well.

The thought process involved in decisionmaking was influenced by her classroom learning, as, obviously, were her financial and marketing skills. But as for the competition in the business world, says Elise, "Challenge for me is internal. It's not generated by winning over someone else, but by competing with myself. I set very high standards." Her participation in sports also helped prepare her for competition, but Elise prefers not to dwell on the outstanding track career in which she set three school track records and won the U.T. Collins/Jones Scholar-Athlete grant. "When I was in college," she says, "women in sports were not being endorsed or compensated as men were. I did not envision a life of running in circles without compensation. So I made a decision to turn my energies toward business and have never regretted it. Yet my involvement in sports was a complement to my education. It created the kind of challenge that I like."

Today she manages her job, a happy marriage to Charles L. Yanders, a 1980 U.T. graduate, and membership on the boards of the Pittsburgh Urban League and the Allegheny YMCA. She is also a member of Delta Sigma Theta, a public service society. To relax, Elise plays tennis and is currently remodeling her 18th Century home.

Facing the Competition

"In my business, competition is fierce," says Elise, "so a natural cutoff is a college degree. The M.B.A. gives you a competitive advantage. But you also need confidence and communication skills. You can be the brightest person in the world, but if you can't communicate with the client, it's all for naught." College cannot prepare the graduate for what really happens within the corporate structure, Elise observes, where there exists a political element that cannot be controlled for. She would advise business students as she advised her youngest brother, who is beginning his first year as a business student, to try to get a feel for every area in the business world, to begin early to read business publications like the **Wall Street Journal** and **Forbes**, and to become acquainted with the real world outside of academia, in every way possible.

"Don't let your differences become handicaps," Elise would advise students. "Work hard and work smart. Exude confidence and learn to communicate."

Jeanne P. McDonald

WILLIAM B. STOKELY III
Chairman and President
Stokely Company

William B. Stokely, III had no problem deciding which university he would attend. His father and grandfather before him were U.T. alumni, and it was natural that he should follow in their footsteps. In fact, the $4.2 million William B. Stokely Center for Management Studies, dedicated in 1974, was named in honor of the three generations of the Stokely family who have been active U.T. supporters. Their involvement began when William B. Stokely, Sr. was captain of the University's first intercollegiate football team and later served on the Board of Trustees from 1927 to 1933. Bill's father, William B. Stokely, Jr., a 1922 graduate from the University, was a major benefactor of the University during his lifetime and also served as chairman of the U.T. Development Council.

Bill Stokely III, who became board chairman of Stokely-Van Camp at the age of 40 in 1981, majored in marketing at U.T. and minored in retailing and business law. When he was in high school he spent summers working in the family business, learning the ropes from the bottom up. While still in college, he did manual labor and learned production techniques and picked up marketing and sales skills.

Upon graduation Bill went into a subsidiary of the family business and subsequently worked in several cities for Stokely-Van Camp, Inc. He held a progression of executive positions, including the position of Executive Vice President of the Canadian Division. He returned to the U.S. as International Operations Vice President and was manager of the Company's largest division and later became President of Stokely-Van Camp. Today, as Chairman and President of the Stokely Company, Bill emphasizes the importance of on-the-job experience. "How else will you discover where your real interests are or whether you will actually like the career for which you have been trained?"

Working in the Real World

"Today," says Bill, "business schools and universities are doing a better job of preparing students for jobs." Still, there are more students with more degrees and thus, more competition. Therefore, work experience is vitally important. But so, also, are athletics and participation in campus activities. "When I hire someone," he says, "I look for people with broad backgrounds. It is good to find someone who made decent grades, but to find someone who had decent grades and a record of participation in other activities, too, is even better. All the outside interests add to the credentials.

"There is really no concrete way to prepare students graduating today for the problems that constantly arise in the business world," Bill says. "How can you prepare them for changes in labor laws, take-overs, new tax laws, energy shortages, environmental factors, and double-digit inflation? Yet they need to be exposed to such situations, through game playing, for example, and they need to be taught that there will be unexpected factors that will occur and must be managed."

Bill aptly demonstrated his ability to react under extreme pressure when in 1982 he attempted a leveraged buyout (LBO) of the publicly-held Stokely Van Camp. At that time Stokely-Van Camp was a Fortune 500 Company with annual revenues near $600 million. Although the attempted LBO eventually failed, Bill impressed Wall Street and his board of directors by selling the firm to Quaker Oats for $230 million, thereby more than doubling the market value for his stockholders, from $35 a share in September 1982 to $77 a share in August 1983.

The Competitive Element

Bill Stokely seems to thrive on competition. "For me, there is a sense of accomplishment in setting goals," he says, "whether it be for myself or the people around me, the people who work with me. There is a certain amount of gratification in setting some tough yardstick and then adjusting to the issues. I would advise graduates to learn to be mentally and physically resilient. After a letdown, get up the next morning and take a positive approach. Find a balance in life between business and the family, which includes cultural, social, and religious elements. Become active in politics. You have to be an advocate for your own business interests. Put all of your efforts into the task and stick to it. Endurance is important from an employer's point of view. Also, be aware of your limitations. You can't start as a manager; you must prove yourself and learn all you can. Find a superior sponsor and pick his brains."

Married and the father of four children, Bill practices what he preaches. His endless list of professional affiliations and civic and cultural activities includes Director, Merchants National Corporation, Indianapolis, Indiana; Young Presidents' Organization; Board of Directors, International Institute of Sports Medicine; Board of Trustees, Indianapolis Museum of Art; member and past chairman, University of Tennessee Development Council; member and past chairman, Knoxville Tomorrow, Inc.; Board of Directors, U.S. Chamber of Commerce; and membership and directorship in many other organizations. In 1983 he was named CEO of the Year by Indianapolis Business Journal Enterprises and in 1984 he was awarded an honorary Doctorate of Humanities by Franklin College in Indiana.

For a man who has come so far, Bill Stokely hasn't even begun to relax or slow down. "What would I like to do next?" He laughs. "Maybe get a doctorate in nuclear engineering." Whatever he does, he says positively, "I'm looking forward to tomorrow."

JENNIFER S. BANNER
Senior Tax Consultant

"One thing I've learned in the business world," says Jennifer Banner, senior tax consultant for Ernst and Whinney in Tampa, Florida, "is that The University of Tennessee, even outside its own geographic area, is very well respected, particularly its accounting program."

Much of that respect Jennifer has earned for herself as a distinguished alumna. In December 1983, after an undergraduate major in general business, Jennifer graduated with a Master of Accountancy degree and a month later started work for Ernst and Whinney, a worldwide accounting firm with which she had served a three-month internship. She credits her ensuing success to her U.T. background, not only in the way her courses prepared her for the business world, but also because of the interest and encouragement of her teachers in the College of Business Administration. "In my department at Ernst and Whinney," she says, "the staff is composed of a mix of attorneys and accountants. With my U.T. education I am as well prepared to function in my capacity as I would have been coming out of law school. From day one to graduation, U.T. prepared me for a career in the business world in terms of organizational skills, time management, and good communication skills, both written and oral. The business world is competitive," says Jennifer. "You have to toughen up, develop a thick skin to survive. But a strong scholastic background and the natural competition that is fostered in the classroom prepared me in advance."

On the Fast Track

Philosophically, Jennifer says her background also taught her how to reason and how to approach problems, particularly in the accounting area. Her master's degree, she believes, put her "on a fast track." That year devoted to specializing in accounting has more than compensated for the extra time spent in school in terms of promotions and financial rewards.

As a public accountant, Jennifer does tax planning, tax research, and tax compliance for individuals, partnerships, corporations, trusts, estates, and employee benefit plans, and handles banking assignments, which is her specialty. "Every day," she said, "I look at my to-do list, which might include 15 or 20 different assignments – maybe an IRS audit, maybe a corporation liquidation, maybe a pension plan with a filing requirement." Her internship was a big help in preparing her for the business world, and she credits Drs. Warren Slagle and Richard Townsend for helping place her with Ernst and Whinney. She also names Drs. Richard Reizenstein, Tony Spiva, and John Wachowicz as being influential at various stages of her academic career. The CBA faculty is very realistic, she notes, neither "ivory-towered" nor "tunnel-visioned." Although faculty interest is extremely important, Jennifer stresses the fact that students need to take charge of their own career plans. "I entered U.T. with plans to be a biologist. Then one day I sat down and asked myself, 'What exactly does a biologist do?' When I looked at all the options, I decided that I wanted more interaction with people. I didn't want to be closed up in a lab all day doing research. Then I took an economics course and loved it, and my career plans began to take shape." Jennifer advises students to use all the resources available to them – the faculty, the placement center, any programs which might be helpful. The Executive-in-Residence Seminars were particularly beneficial in terms of letting her see what was actually going on in the business world and in presenting new ideas and opportunities. Her advice to incoming freshmen, no matter what their fields, is to take the attitude that it is never too early to start looking toward careers. "It is never too early to go to a dean or a faculty member and say, 'I'm interested in a career in economics, in finance, or accounting. How can you advise me?'"

A Quality Education

Now 27, Jennifer chose U.T. partly because she was from Knoxville, and partly because it was a good price value. But she says that she also knew U.T. would provide a quality education, excellent facilities, and a faculty with strong credentials. Although she had planned all along to go into graduate school, she had not necessarily planned to pursue her graduate studies at U.T. However, once she got to know her professors and saw the calibre of courses in the business program she decided to remain at U.T., graduating in one of the first five-year accountancy programs to be accredited by the American Assembly of Collegiate Schools of Business (AACSB).

There is no aspect of her college preparation that she would have approached differently, Jennifer says. While still in undergraduate school she debated about whether to work for the Master of Accountancy degree or the MBA, but her undergraduate general business background, coupled with her tax courses at the graduate level, gave her an excellent foundation in exactly the kind of work she does today. "The only thing I might have done differently," she says, "would have been to make more use of the University-sponsored lectures, symposia, presentations, etc. that might have broadened my perspective. Listening to a different viewpoint on the issues can be extremely helpful."

"I love the business world," Jennifer says. It is exciting and dynamic – in short, everything I had hoped it would be."

JERRE HASKEW

**Investment Banker/
Management Consultant**

In 1958, as valedictorian of his senior class at Baylor School in Chattanooga, Jerre Haskew had his pick of universities across the country – among them Yale, Columbia, Duke, and Harvard. He had not even applied to U.T. But that spring disaster struck his family when his father died, and so both for financial reasons and to be near his family, he enrolled at U.T. on a $110-a-month V.A. pension allotment. Looking back, Jerre, now chairman and president of the Haskew Company, an Investment Banking/Management Consultant firm in Chattanooga, says that in the long run, coming to U.T. was "the best thing that ever happened to me."

Under the influence of teachers like Drs. George Bishop in finance, Eugene Pierce in insurance, and J. Fred Holly and John Moore in economics, Jerre sharpened his leadership skills and trained for the business world through his various campus activities. An aspiring singer and guitarist, Jerre also performed with a musical group called the Cumberland Trio, which won the National Collegiate Folk Festival competition and appeared on ABC television's Hootenanny program. He got some of his first real business experience dealing with contracts for the group, he says, and learned some "great lessons about life."

Developing Communication Skills

As head of the Campus Entertainment Board he gained further business experience, which was reinforced through his offices in Delta Tau Delta fraternity. "So many of my leadership skills were developed in college," says Jerre. "But ultimately it all goes back to people and the influence certain individuals have on you and the tremendous campus activities that developed leadership and communication skills."

In 1965 Jerre's wife Barbara, whom he met through campus activities, was offered a teaching job at Memphis State and Jerre interviewed with the First National Bank of Memphis (now First Tennessee) and became the bank's first management trainee. He later became Executive Vice President and Manager, International Banking Division, at the Commerce Union Bank in Nashville. In 1971 he attended the ABA School of International Finance in Colorado and later he became Chairman and CEO of Commerce Union Bank of Chattanooga.

Finding a Niche

Jerre's father was basically an entrepreneur, running his own contracting business. The fact that Jerre had always wanted to own a family business was instrumental in his forming the Haskew Company this past winter. "The trick is to find a niche where a service is needed or demanded. I felt there was a void in wholesale investment banking for small and medium-sized businesses, a need for it not only in East Tennessee, but in the entire Southeast. Students today should establish where the voids are and then try to fill them."

At the same time, Jerre would advise graduates as he has advised his daughter Bonnie, who will graduate from the U.T. College of Business Administration next quarter, "Follow your heart. Do what you want and be happy. If you believe in what you do, others will believe in you and work with you. People who invest money with you *must* believe in you." Jerre adds, "There is too much emphasis in society today on materialism. A graduate should not accept merely the highest paying job but the job which in the long run will provide the most personal satisfaction and opportunities for advancement."

Finding Personal Satisfaction

That personal satisfaction is what keeps Jerre Haskew active. "I can't see ever retiring," he says. "I want to build our family company to be an important factor in investment banking and management consulting in the Southeast." His university contacts, both faculty and student associates, have been a vital part of his business and personal life, and both Jerre and his wife Barbara have kept in close touch with the University through gifts and involvement in U.T. activities. "Those contacts are a wonderful part of the educational process. If I had gone to Yale, I would have been much more isolated socially. At U.T. I gained a much broader perspective and was able to meet people from all walks of life."

In many instances Jerre has broadened the concepts of young people through public services. He has lectured on international finance and corporate planning at U.T., at Vanderbilt's Graduate School of Management and the Law School, Middle Tennessee State University, and Louisiana State University's School of Banking of the South. He has served as director, Johnson and Staley Company, Inc., Nashville, and Fidelity Trust Company and Willwear Hosiery Mill of Chattanooga, and has served on the ABA Executive Committee on international banking and correspondent banking. In community service he has been statewide president, Tennessee Council on Economic Education; president, Boy Scouts of America, Cherokee Area Council; chairman, Hamilton County Heart Association; Chairman of Finance, First United Methodist Church; and has held numerous other posts.

Jerre's company has just orchestrated the acquisition of a company called Guild Music Corporation, which manufactures, of all things – guitars, so in a way, as the new chairman of Guild Music, Jerre has come full circle from his folk singing days, except that now he has an even larger and more appreciative chorus.

BARBARA HASKEW

Chief, Rate Design Staff
TVA, Chattanooga

At the time Barbara Haskew entered college in 1958, women were not encouraged to develop business careers, particularly in the South. In fact, when she later interviewed with a national corporation for a job as an economist, she was told by the recruiter that the company hired women only for secretarial positions. But at The University of Tennessee, Barbara had found supportive mentors, especially in the late J. Fred Holly, who respected women's capabilities and encouraged them to fulfill their potential.

That is exactly what Barbara Haskew did — becoming the first woman in the Economics Ph.D. program (even under the particularly female handicap of having a child while pursuing her course of studies). She went on to teach economics for fifteen years in higher education, to serve as an arbitrator on the rosters of the Federal Mediation and Conciliation Service and the American Arbitrators Association and is now Chief, Rate Design Staff, at the Tennessee Valley Authority in Chattanooga. "The rate design staff," says Barbara, "is committed to the development of equitable rates reflecting the cost TVA incurs to provide power to consumers across the Valley. Such analysis, though it may become highly technical and complicated, is always undergirded by the commitment to a fair division of these costs among the many groups of customers."

Making the Best Choice

As a sophomore in high school in Franklin, Tennessee, Barbara won an essay contest on the subject "Why I Am Glad to Be an American." The award was a $1000 college scholarship. Following the press release about her essay, she received a letter from U.T. urging her to select the Knoxville campus for her college career. Her father had attended U.T. and was an enthusiastic fan, so her decision was not a difficult one. Barbara thinks it was one of the best choices she has ever made, principally because it was at U.T. that she met Fred Holly, who became not only her teacher and advisor, but a lifelong friend. Among other professors in the College of Business Administration who were positive influences on Barbara's academic career were Hans Jensen and John Moore in economics.

Barbara is one of those women who "want it all" — a family *and* a career. And since her marriage and her children are so important to her, she has had to leave jobs she loved to follow her husband. That has been her choice, she emphasizes, because her husband has always encouraged her career, and she has encouraged his. But she views each move and career change as positive learning experiences. "I have a daughter, Bonnie, who is graduating in marketing from U.T. this winter, and another daughter, Holly (named after Fred Holly), and I would tell them and other women to develop skills from the very beginning, and if they want careers *and* marriage, they can increase their flexibility if their skills are good enough and if they are always willing to learn new ones."

Up the Career Ladder

From 1973 to 1980, Barbara was Chairman, Department of Economics and Finance, Middle Tennessee State University, and had earlier taught economics at Memphis State University. During the late 1970s, in addition to teaching, she undertook projects consulting with the Tennessee state government on public sector labor relations and taxing and spending issues. When her husband's career dictated a move to Chattanooga, Dr. Holly was instrumental in helping her find a position at TVA, and as it turned out, it was good timing. "At the time I took the job as chief of the Rate Staff, the field was paying much more attention to economic concepts, so the job is challenging and rewarding."

Barbara first majored in journalism, which was then part of the College of Business Administration. The required business courses whetted her interest in economics, and the ensuing Ph.D. has opened many doors for her. Barbara notes that particularly for a woman, the advanced degree is invaluable. "Despite whatever experience she may have," Barbara says, "a woman needs credentials to get her foot in the door." Her advice to freshmen is to stretch themselves as much as possible, to take the most demanding courses. "Quantitative courses develop analytical skills which can serve you well throughout your career. Also work on interpersonal and communication skills and learn to express yourself clearly and effectively."

Professional Activities

Barbara's active participation in professional and community activities is an important adjunct to her business life. She has been Chairman, Chancellor's Roundtable, U.T., Chattanooga, 1983; member, U.T. Development Council, 1985; member, Rate Committee, American Public Power Association; President, MTSU Foundation, 1982; member, National Board of Directors for INROADS, an organization which assists academically talented minorities to secure college degrees in business and engineering; member, Board of Directors, The Community Foundation of Greater Chattanooga, and various other organizations.

"I am still learning from The University of Tennessee," Barbara says, "through my personal relationships and my daughter's learning experiences. From U.T. I have received not only continuing resources, but some of the best friends I will have in this lifetime."

PHILLIP MOFFITT
Editor-in-chief
Esquire

When Phillip Moffitt, editor-in-chief, president, and chief executive officer of the Esquire Magazine Group, Inc., first came to The University of Tennessee, Knoxville, he was looking for more than a college education. During his college career (he obtained a B.S. in political science and psychology with honors in 1968 and an M.S. in economics in 1971), his focus was "and has remained the understanding of human nature and the nature of reality." At that time, Phillip, who originally planned to study law or psychiatry, had no interest in editing or publishing.

An Avid Reader

But Phillip was an avid reader. "If there is a single outstanding feature of my involvement in publications," he says, "it is my extreme empathy and communication with the reading audience." That empathy led first to "Nutshell," a college publication printed in 1969, then to 13-30 Corporation's formation in 1971, on to the acquisition of **Esquire** in 1979 (when he was 32), and finally to his newest venture, **New York Woman**, a bi-monthly women's magazine that made its debut this September.

While Phillip's academic record was excellent, he was also learning leadership skills and communcations by participating in student activities. "As for the courses," he said, "it wasn't the subject matter that was so valuable but learning how to learn, learning how to get something done, and how to internalize responsibility." He served in the first student government of the Tennessee Intercollegiate Legislature, and was elected president of the student body. He was also selected Outstanding Senior. "The university must be viewed as a laboratory of real-life learning," he believes. "Students need to be involved in more activities, to be in *charge*."

Being in charge and loving it was what motivated Phillip to devote long hours to student activities. "I was not ambitious," he says, "I *loved* getting to do those things. Being responsible for projects was fun. There were many courses I wanted to take but couldn't, because I was so involved in other projects."

Founding 13-30

One of those projects was co-founding the 13-30 Corporation with David White, Chris Whittle, and Brient Mayfield. In 1979, he and Chris Whittle took over **Esquire**, a magazine troubled with low circulation and a poor renewal rate. They were faced with negative predictions for success in the publishing world, but in seven years, they managed to strengthen **Esquire**'s renewal rate, increase the magazine's circulation to 700,000, and triple its newsstand and advertising sales. Phillip, now **Esquire**'s controlling owner, says these goals were accomplished by giving the magazine a consistent identity and demanding high journalistic standards. **Esquire** earned the 1983 Magazine of the Year Award for innovation and excellence by the American Society of Journalists and Authors and nominations for many more awards. Other ventures Phillip has directed since taking over the corporation include Esquire Press, the Esquire Health and Fitness Clinic, and Esquire Video. He also serves on the boards of directors of the **London Standard** (the only evening newspaper in London), Associated Investments (Harmsworth), Ltd., and the Magazine Publishers Association.

There have been many changes in the business world since Phillip Moffitt graduated from college, and one of them has been the appearance of more women in the work force. "At **Esquire**, we hire as many women in top management as men, and the business is the better for it."

Working for Success

Currently, there is more willingness to back the entrepreneur than when Phillip began in business, but he thinks there is a need for more training in this area. Young businessmen or women often run out of perseverance before they run out of money, he believes, and there should be a good feedback system that allows those people to correct their mistakes. He thinks that young people today harbor misconceptions about how things are done in the business world. "I thought that the ability to do good work made us good quality people, but the road to producing a successful product is much longer that it appears." He still spends long hours, seven days a week, working on **Esquire**.

Phillip thinks that the tax bill now being considered means that the emphasis on material success is coming to an end. "This is an opportunity," he says, "to put more emphasis on the common good and to address issues like education, the drug problem, and social service. There are numerous ways to achieve recognition and satisfaction through helping groups, whether it be church, city, state, or the country. This country is so fortunate to have an atmosphere in which so many individuals are motivated to do something of real accomplishment. And not just in business. I'm talking about medical researchers, statisticians, creative writers."

Growth, change, and learning pervade Phillip Moffitt's philosophy. At present, he is working on a third magazine that he hopes will be ready by fall 1988, although the format is not yet finalized. "I always want to be a student. I hope I never reach the end of a four-year period and say I haven't learned anything."

"I have come to realize that many of the things I never expected to use actually have a purpose in the real world."

SHERRY JARED
Unit Sales Manager

During registration for classes in her third year at U.T., Sherry Jared was walking into Stokely Management Center, stewing about the fact that the computer hadn't given her a single class she had signed up for. She stepped onto the elevator, where a pleasant looking gentleman noticed her distress and asked what was wrong. Sherry spilled out her troubles and the man commiserated with her, told her his name and the location of his office. "If I can do anything to help you," he said, "let me know." Later Sherry realized that the man, Warren Neel, was dean of the College of Business Administration, and thus began a relationship that continued to influence and encourage Sherry for the remainder of her college career. "For me," says Sherry, "he was always accessible, and a great supporter. He believes in the older student and in women accomplishing as much as possible."

Sherry fit into both those categories. At 31 she was entering college after a divorce and an eight-year career in retail management, including owning and managing her own women's clothing store in Pulaski, Tennessee. At that point, she planned to earn a doctorate in marketing. However, by the time she earned the B.S. in business in June of 1985 she had been offered a job with Proctor and Gamble and is now Unit Sales Manager, New Orleans Food Products. Her responsibilities include managing $8-10 million in direct annual volume, and managing personnel, administration and forecasting for three top accounts in the New Orleans Food Products District. "Before returning to college," Sherry says, "I was a buyer. Now I am in sales, so I am seeing things from both points of view."

Campus Activities

During her years at U.T. Sherry was extremely active in campus activities and received numerous honors, including the 1984 University of Tennessee Women of Achievement Award for outstanding accomplishment in scholarship or service, inclusion on the National Dean's List, and the Fred M. Roddy Scholarship. Her present interests include travelling, reading, golfing, and historic archaeology.

Sherry's campus involvement and her relationships with faculty like Dean Neel, Richard Reizenstein, Roger Jenkins, Ernest Cadotte, and Harry Hughes became valuable assets in her career. "All those activities," she reflects, "sharpened my leadership and organizational skills. In the classroom, one of the most useful tools I learned at U.T. and use every day on the job is prioritizing, which is a form of time management. Also, in undergraduate seminars I was exposed to different corporate and business theories. In the executive-in-residence seminars I met many well-known executives and gained exposure to a variety of views as an undergraduate. I use my marketing and accounting skills every day, the analytical skills I learned in Bob Woodruff's class in Marketing Opportunity Analysis, and the problem-solving skills I learned in Dick Reizenstein's Marketing Decisions and Strategies. My job also incorporates cost accounting and logistics, especially when I am dealing with wholesale groceries or figuring distribution costs. I have come to realize that many of the things I never expected to use actually have a purpose in the real world."

Sherry advises graduates that to achieve career objectives they need to know where they are going and how they are going to get there. It is important to know also how they will use their skills and to be able to articulate this information to perspective employers.

Last fall, even though she had graduated from U.T. only four months before, Sherry was invited back to the University to speak at a Women in Business Symposium. That invitation reveals some of the confidence the University has in Sherry and the pride in her achievements. The mother of a grown daughter who now has a child of her own, Sherry at 37 loves the excitement of the changes in her life and career. "One of the best things that happened to me at U.T. in the business curriculum," she says, "was the exposure to different ideas and different cultural experiences. Returning to school was one of the most rewarding things I ever did. There is definitely a correlation between hard work and its effects on my environment. Challenge is a strong motivational factor for me. At some point in my future I would like to continue my education, perhaps earn advanced degrees. I love to learn. It gives me a great deal of personal satisfaction."

"I would urge universities to make sure undergraduates get more classical, well-rounded educations . . . and a concentration on business after that."

DAVID McKINNEY

Vice President
Communications,IBM

Can a college boy from a little town like Sweetwater, Tennessee, find happiness and success in a big corporation like IBM?

For David E. McKinney, 1956 U.T. graduate in marketing, the answer is yes. After a classical 30-year career within the IBM organization, David is now Vice President, Communications, for IBM, and has served as President, IBM, World Trade Americas/Far East Corporation; executive assistant to chairman of the board, president of the Information Records Division, Vice President of Personnel, and has held numerous other positions within the organization.

Early on, David McKinney made a commitment to his career and his company, but his most consuming interest seems to be in people. Voted Outstanding Senior in CBA in 1956, he says that his extracurricular involvements taught him how to motivate people as well as communication and problem-solving skills. "Coming from a small town," he says, "I found it stimulating to interact with lots of different people. I especially enjoyed participating in campus politics. Some of those experiences were more beneficial in the long run than information I learned in classes." Today David is still working with people, involved in press relations, internal communications, advertising responses, and publications. He also serves on the executive committee and board of trustees, International House, and is a director of the International Executive Services Corps and Organization Resources Counselors.

A Business Background

David transferred to U.T. from Vanderbilt in his sophomore year, partly because he wanted to attend a business school that offered both retailing and marketing.

One of the most useful experiences was his internship in retailing at Sears and Millers. In addition, most of his advanced marketing and retailing classes involved case studies and practical experience; therefore, there were no real surprises for him in business, especially since he had often accompanied his father on company trips and had grown up in a business environment.

David believes that his association with faculty members was also an important factor in his university career. Through campus activities he met Assistant Dean Gene Upshaw, who influenced him greatly; and Dr. Howard Dye, Professor of Economics, was a valuable teacher because of the high standards he set for his students. Other professors who were supportive during David's college career were Drs. E. O. Dille and Eddie Garrison in marketing and retailing. "In 1956 there were no computers on campus," says David. "But there was a basic set of fundamental knowledge, the classical courses, such as accounting, statistics, economics. Most of the advanced marketing and retailing classes involved case studies and practical experience."

In recruiting for IBM, David has noticed the trend of business schools to produce graduates who are more specialized and narrowly oriented to a particular field. "I would urge universities," he says, "to make sure undergraduates get more classical, well-rounded educations. There should be a more liberal education in the undergraduate years and a concentration on business after that."

When David McKinney graduated in 1956, students were more materialistic, he says. "We were entering a stable economy and a healthy job market. Today's graduate, having lived through two recent recessions, has a better balance of social consciousness and a more competitive spirit." Whatever field the graduate enters, David believes that it is important for him to work at something he enjoys doing. "The world offers the young person many diverse opportunities. We learn from doing, and we can profit from our mistakes by quickly turning them into learning experiences." He believes that it is vital for today's graduate to become knowledgeable about what is going on outside the United States culturally and geographically. "In the longer term," he says, "the U.S. is not going to be able to continue to enjoy a significantly higher standard of living. There is a great deal of foreign competition and there is much to be learned from other cultures. Economically, we have a difficult period ahead."

Whatever that period involves, David McKinney wants to be part of it. He has enjoyed his associations with college students at universities, where he has often lectured and recruited, and he hopes in the future, perhaps after his retirement, to be associated with young people in some capacity.

Reviewing David McKinney's qualities, no one would ever be surprised that a student from East Tennessee could compete with the Ivy League. As David himself has so aptly phrased it, "Success depends on the commitment."

"After you learn the technical skills, you have to step back, look at the situation, and then apply a measure of common sense."

SUE FORD

Regulatory Economist

When U.T. Chancellor Jack Reese spoke at the 1984 Conference on Bank Structure and Competition in Chicago, the young woman who introduced him had good reason to be proud. Only six years before, Sue Ford had been an M.B.A. candidate in finance at U.T. Now she is a regulatory economist in the Research Department of the Federal Reserve Bank of Chicago, having held that position since her graduation in 1978. In 1984 she also earned a degree from the Stonier Graduate School of Banking. Her thesis on the evaluation of bank stock prices was one of six designated to reside in the permanent collection of the Stonier Library.

As a regulatory economist Sue evaluates the competitive effects of proposed bank holding company acquisitions and mergers. She has recently returned from a six-month assignment at the Federal Reserve Board of Governors and presently is studying the impact of interstate banking on competition among banks. Several of her articles on banking structure have appeared in **Economic Perspectives**, the bimonthly publication of the Chicago Fed.

Attending U.T. seemed a natural choice for Sue, since she was from Knoxville and both her parents had attended the university. Of her graduating class at Bearden High School, almost 85 percent went on to college, and two-thirds of those students entered U.T. In the College of Business Administration, Sue was vastly influenced by her associations with members of the faculty. As an undergraduate major in accounting, she was a proctor for Dr. Richard Townsend and a graduate research assistant for Drs. Leslie Anderson and Mary Lindahl. Dr. Harry Johnson in finance was instrumental in helping her get a position at the Federal Reserve Bank of Chicago.

Getting the Right Perspective

"Part of the key to being successful is perspective," says Sue. "After you learn the technical skills, you have to step back, look at the situation, and then apply a measure of common sense. The analytical, academic skills should be integrated with social skills. That integration, which amounts to learning how to deal with people, makes you well-rounded and a good corporate citizen."

Sue frequently uses those social skills in speaking to academic and professional groups on economic principles and banking structure.

Her business background, particularly the analytical skills, helped her to step into the business world with very few surprises. The fact that the faculty had outside consulting interests and experience in the business world made the academic link to business more realistic for their students, she says. "The skills I learned in accounting, finance, economics, and statistics I use every day. The other applications to real situations, through my work at U.T. as a research assistant, helped me integrate. And the move from academics to business was easily bridged, particularly because my research area at the Federal Reserve includes a number of academicians."

Most of her co-workers also have advanced degrees, although she says that is not true of the Federal Reserve Bank of Chicago as a whole. Experience and track records count a great deal in other departments, too.

Sue believes that her training at U.T. prepared her admirably for her present position. The only thing she might have done differently would have been to gain some work experience between undergraduate and graduate school. Other than that, she says, "I have been very lucky. There is nothing I would change."

BRIAN JOINER

Management Consultant

Brian L. Joiner is a man with a mission. As a disciple of the W. Edwards Deming philosophy of quality management, he believes so firmly in the concepts that he has formed his own company, Joiner Associates Inc. in Madison, Wisconsin. The firm, which is engaged in management consulting, software development, and training for industry, has advanced an approach toward management called Total Quality Leadership, focussing on improving productivity through teamwork and statistics.

In 1960, the Asheville, N.C. native earned a bachelor's degree in industrial engineering from U.T. and after working that summer for the Green Giant Company in Washington state as an industrial engineer, he saw the importance of analyzing data and designing experiments and returned to school to earn his M.S. in business. His major was in accounting and his minor in statistics. "I wanted to be a consultant, and the major avenue in those days was to work for an accounting firm," says Brian. "The minor in statistics came about because of the things I learned at Green Giant."

Changing Statistical Approaches

He was motivated by Professor David Chambers, now retired but still a major consultant in quality productivity, to return to school for yet another degree – the Ph.D. in statistics, which he earned at Rutgers in 1967. "Historically," he says, "that was a time when not many people were interested in quality control." Soon after that Brian met Lola Deming, who worked in his statistical group at the U.S. National Bureau of Standards, but it was not until years later, in 1980, that a closer association began with Dr. Deming.

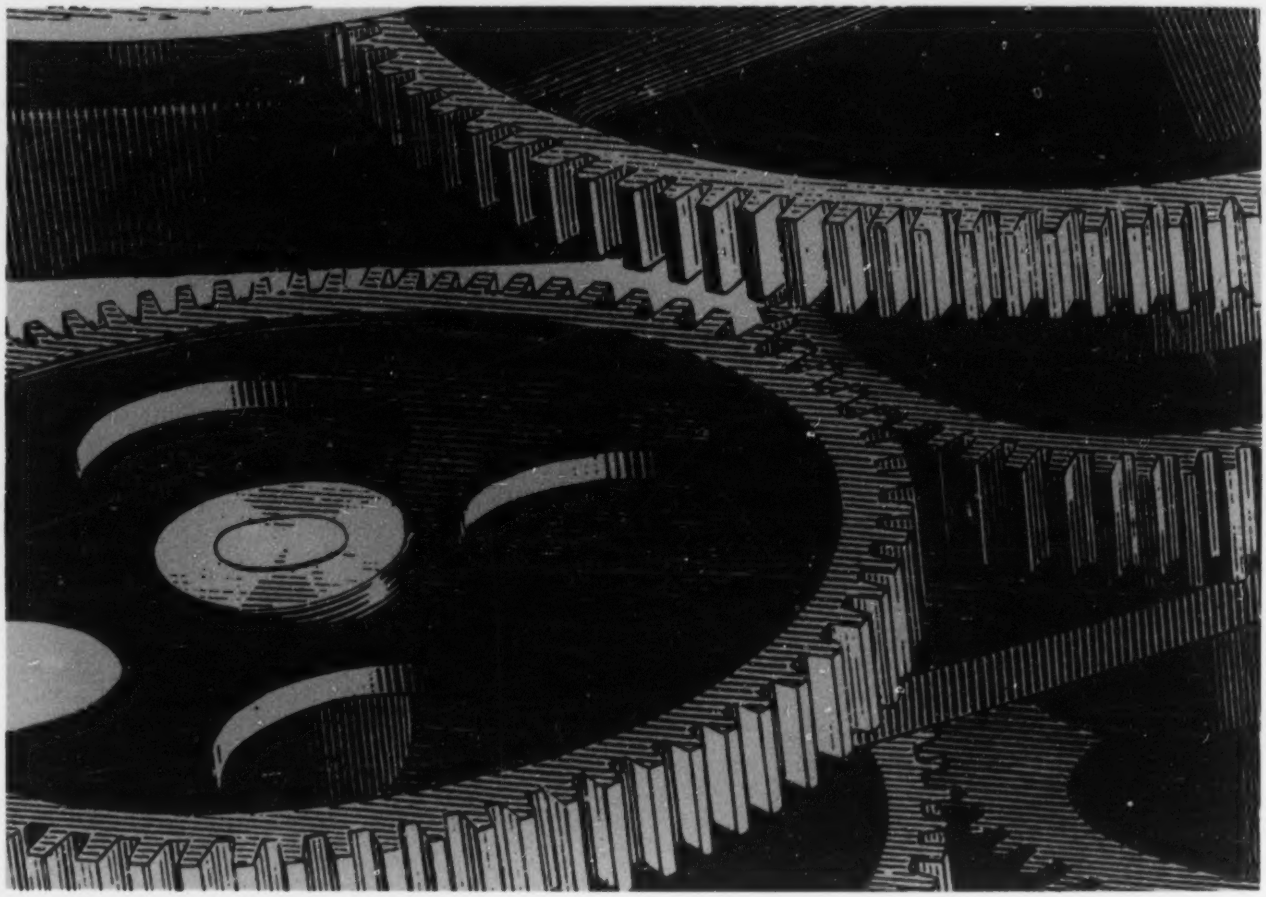
In the meantime, Brian taught at Pennsylvania State University for three years, where he improved the introductory statistics course and helped develop a computer program called Minitab, which, he says, eliminates computational drudgery and allows students to focus on the important concepts, on how to select an appropriate procedure and on how to interpret the results. He would like to change the way statistics courses are taught today. "The statistical methods that are taught apply to problems where there is some fixed population from which you can draw a random sample, whereas the most important problems for business and science are not of that nature. They have to do with forecasting the future or understanding the underlying causes of variation. Different statistical approaches are needed for the latter class of problems, whereas what is taught today is almost totally oriented toward the former."

For the next ten years Brian was on the faculty at the University of Wisconsin, where he taught a required graduate course in statistical consulting. "This is the type of course that gets students involved in real-life situations," he says. Brian would like to see changes in the curriculum that would challenge students to think, to analyze, to dissect, and rebuild. "There is too much emphasis today on learning facts as opposed to learning how to think and how to solve real problems." In business, for instance, that means getting involved in the basics, getting to know the hourly workers and what it is like to work in an environment filled with problems beyond your control. "Understand," he says, "that the job of a manager is to help people do a better job, to improve the systems by which the work is accomplished."

Formula for Success

His formula for success combines education and experience. "After my freshman and sophomore years I sold cookware in the mountains of Appalachia. I had many part-time jobs throughout my education – farming, pea harvesting, selling, teaching, and working in research laboratories." Having seen the business world from all these angles, he was familiar with many of the problems prevalent in American industry. When, in 1980 he watched Deming on the NBC White Paper report, "If Japan Can, Why Can't We?" he was ready to make a change. He wrote Deming, offered to help him advance his ideas, and after visiting several industries with him, decided to become a consultant for quality and productivity. In 1983 he started his own business with a staff of four. Now, with 33 employees, he has clients from California to Boston. "Our primary work," he says, "is with a few clients on a long-term basis." He has received awards from the American Society for Quality Control and the American Statistical Association.

Brian Joiner's academic progress could be an inspiration for late bloomers. In grade school he maintained a low C average; in high school a low B average. In fact, a few teachers advised him not to go to college. He ignored the advice, made A's in undergraduate school, and actually improved his grade point average in graduate school. He has done admirably academically, but he stresses the fact that communication with people, whether they be clients or coworkers, is the key to success. "People matter," he says. "We are all in this together. If everyone in the world used a scientific approach and worked together harmoniously, what a world we would have."



How We Interact . . .

CBER: 50 Years of Regional Economic Research and Service

David A. Hake and Kenneth E. Quindry

The 50th year in the life of the Center for Business and Economic Research (CBER) in the College of Business Administration is a time for both reflection and opportunity. CBER first appeared in the university organization in 1937 as the Bureau of Business and Economic Research within the School of Commerce in the College of Liberal Arts.

(Editor's Note: Space does not allow the mention of dozens of individuals who contributed significantly to the Center in the course of its development, particularly in recent years with a significant expansion of the staff. It is of course the human resources that have made possible the achievements outlined in this article, and the contributions of those individuals, though unmentioned here, are gratefully acknowledged.)

While its core mission remains little changed, its scope has expanded dramatically. From a largely individualistic fiscal assistance program, it has grown to a research, policy analysis, and communications technology arm of the current College of Business Administration, with a staff of about 30 academic and support professionals plus from 20 to 30 graduate and undergraduate student assistants.

An organizational goal has been to influence decision quality in the public and private sectors. Some of the more visible outcomes of recent CBER research and service activities include the following:

***Economic Report to the Governor** – published annually since 1975 by the Tennessee State Planning Office, the in-depth analysis of national and state economic environment is based upon ten-year and ten-quarter state economic forecasts, the latter designated as the official forecast for state government internal programming and future budget planning purposes. Forecasts are produced using the Tennessee Econometric Model (TEM), developed and maintained by CBER staff.

***Constitutional Spending Limit** – The Tennessee Constitution limits growth in state expenditures to estimated growth of the state economy. State law provides that the TEM-produced projection of personal income be the source of the measure of the state's economic growth.

***Unemployment Trust Fund forecasting** – TESIM, the Tennessee Employment Security Insurance Model, is a TEM satellite aiding in quarterly review of the most likely two-year future of fund inflows (employer-paid unemployment insurance premiums), and outflows (unemployment compensation claims).

***Nissan USA and Saturn Corp. economic effects** – Consultations with local governments on the economic and fiscal effects of the Nissan plant location in Rutherford County led to development of TILI, the Tennessee Industrial Location Impact Model, which served as an input in setting the in-lieu-of-tax payment for the Saturn plant in Maury County.

***Fiscal policy counsel** – Staff has been provided for several major tax studies assisting both executive and legislative tax study groups in studying the state's economy, tax structure, revenue distribution formulas, etc., with emphasis on revenue and fiscal reform.

***Technology integration** – since January 1985, CBER computer resources staff have helped the College implement a $2,000,000 communications technology system involving nearly 300 personal computers. The systems approach enables maximum progress to be made toward an appropriate use of computer and information technology in teaching, research and service activities of the College.

***Information dissemination** – Socioeconomic data and economic analyses are disseminated through the annual **Tennessee Statistical Abstract**, the **State Data Center Newsletter**, the quarterly **Survey of Business**, and several titles yearly in the **Socioeconomic Research Monograph Series**.

There is a rich heritage of interaction between the University of Tennessee and the public sector including a number of individuals who, before or after their public service, were employed by or closely associated with CBER (see Figure 1). Such individuals have been Constitutional Officers, members of the Governor's Cabinet, and have held key posts in operating agencies. Associates who have spent part of their careers in state government and returned to the University include a Vice President and the President of the University. The institutional understanding arising from such linkages is important in the long-run policy advisory process.

From its beginning as an individualized **ad hoc** operation to aid state government, CBER has evolved into a multifaceted institution.

The First Decade, 1937-1946

Sometime in 1925, Dr. Harcourt Morgan, President of The University of Tennessee, went to Nashville to confer with Governor Austin Peay. According to legend, Governor Peay said, "Morgan, if you want to put the University on the map, you need to do two things – first, start a football team and hire a coach who can win some games and get some publicity in the newspapers, and second, you need to get an economist who can help the state in taxes and get the state some revenue, because if we don't get some revenue, it doesn't make any difference about education, we're not going to have any money anyway."

While this anecdote may or may not be true, in 1926, General Robert Neyland was hired as football coach. Governor Peay's 1927 successor, Governor Henry H. Horton, requested University help on state tax reform, and in 1928, Dr. Charles P. White from the Wharton School at the University of Pennsylvania joined the faculty of the College of Liberal Arts as Associate Professor of Finance in the School of Commerce.

While Dr. White was called specifically to do tax research, his work

FIGURE 1

LIST OF INTERVIEWEES FOR THIS ARTICLE

Name	Earliest Bureau/CBER Contact, Position and Date*	Affiliation, September, 1986
Gerald Adams	Deputy Commissioner, Dept. of Finance and Administration, 1968	Deputy Commissioner, Dept. of Finance and Administration
Thomas P. Benson	Commissioner, Department of Revenue, 1968	Tennessee Railroad Association
Herbert J. Bingham	Executive Director, Tennessee Municipal League, 1948	Retired, Executive Director
Edward J. Boling	Graduate Student, Instructor of Statistics, 1948	President, The University of Tennessee
John T. Bragg	State Representative, Murfreesboro, 1968	State Representative, Chairman, House Ways and Means Committee
Ormond C. Corry	Research Associate, BBER, 1949	Research Professor Emeritus
James C. Cotham, III	Director, CBER, 1969	Professor, Belmont College and Independent Management Consultant
Lewis R. Donelson	Member, Tax Modernization Program, 1972	Partner, Heiskell, Donelson, Bearman, Adams, Williams & Kirsch
Winfield Dunn	Governor, Tennessee, 1972	Candidate for Governor
Donald W. Jackson	Executive Director, Tennessee Taxpayer's Association, 1972	Commissioner, Department of Finance and Administration
Randall E. Matlock	Director of Finance, Rutherford County, 1978	Director of Finance, Rutherford County
John L. Parish	Commissioner, Department of Economic and Community Development, 1982	CEO, Worth Sports Company, Tullahoma
W. Harold Read	Associate Director, BBER, 1947	Retired, Vice President Emeritus for Business and Finance, U.T.
William R. Snodgrass	Research Associate, BBER, 1947	Comptroller of the Treasury, State of Tennessee
Charles P. White	Director, Founder, BBER, November 6, 1937**	Professor Emeritus, Finance

*Position and year of earliest Bureau/CBER Affiliation or Contact with Bureau/CBER staff.

**This date was the 40th birthday of Charles P. White. The 50th birthday of the Center, in 1986, is also Dr. White's 90th. Happy Birthday, Dr. White.

"Splinter Hall" contained the first office of the staff of the Bureau of Business and Economic Research in 1947.

soon spread to non-tax fields. Even though he enjoyed a reduced teaching load, repeated requests for research assistance exceeded his capacity. It became urgent for additional faculty with reduced teaching loads to fill the void. School of Commerce Director Dr. Theodore W. Glocker was sympathetic and provided released time for professors interested in research. Also, Dr. Glocker was supportive of a formal research organization to the extent permitted by the budget. When research of a public sector nature was required, Dr. White and Dr. Glocker came to refer to the work, and the method of "released time" financing, as "bureau work". The concept of a "bureau" matured to become formalized as the **Bureau of Business and Economic Research** in 1937, with Dr. White as Director.

In the late 1930's, the School of Commerce became the School of Business Administration, General Neyland won some ball games, Dr. White fathered the Bureau, and the University was on the map.

In the first decade the Bureau of Business and Economic Research lived informally with no independent staff or budget. Dr. White continued essentially as a one-man staff and supervisor of research, working usually with the public sector, with intermittent help from the faculty. Faculty were granted reduced teaching loads or released temporarily from teaching and assigned research tasks on an individual basis.

> ***The integrity and dedication of the early regional economists, statisticians and accountants as emerging public sector councilors and professionals was indispensable to the maturation of the Bureau as an institution of policy-related research.***

It was not until after the close of the first decade that the Bureau gained a permanent staff and budget. As in 1928, the State recognized a new plateau in its need for fiscal assistance and called upon the University for help.

A Decade of Growth and Change: Sowing Seeds of Policy Impact, 1947-1956

A state call for assistance in 1947 marked a turning point in Bureau development. The Bureau became a source of fiscal expertise in the University at the time that needs for expertise exploded. Following World War II, with the return of veterans to the campus, University enrollment quickly quadrupled and emphasis on education expanded. As both University and government activity grew, inadequacies in accounting and budgeting capacity became untenable.

In 1947, the School became the College of Business Administration and Bureau staff expansion began. W. Harold Read, Professor of Accounting, assumed a joint appointment as Associate Director of the Bureau. Mr. Read recruited Army veteran William Snodgrass, who had just completed a B.S. degree in Accounting at U.T. in June, 1947, to become the first full-time employee of the Bureau. Another veteran, Robert Hutchison, returned to Tennessee from graduate studies at the University of Chicago, accepting a position at the Bureau, several research assistants were employed.

Indicative of the role Dr. White envisioned for university research was the resource commitment of the Bureau when, in 1949, Ormond C. Corry, with a University of Texas graduate degree, Tennessee Valley Authority and private industry background was hired to begin work with other regional economists on basic methodologies for measurement of local area economic activity. Funded in part by TVA, the joint research goal was the annual development of consistent estimates of personal income and population at the level of a specific county. The U.T. Bureau was a founding member of the Southeastern County Income Conference, hosting the first meeting of the group, consisting of researchers from U.T. and six other southeastern universities, TVA, and the U.S. Department of Commerce, in 1951 in Knoxville. Several Bureau research papers arising from this work are now considered as seminal in regional economic measurement literature.

In 1947, most Bureau offices were in an old army barracks behind Ayres Hall ("Splinter Hall" is pictured on page 29). In 1949, Read, Snodgrass, Hutchison and Corry moved Bureau offices to the Turner House on the west side of The Hill. The Turner House had formerly been the offices of Coach Neyland and the Athletic Department. Bureau staff shared space there with several College faculty in the Statistics Department, David S. Chambers, Frank Williams, a graduate student/instructor, Edward J. Boling, and Bob Dupree, on joint appointment with Economics.

Bureau offices were moved to the newly completed Glocker Business Administration Building in August, 1952. Also in 1952, Dave Chambers returned from doing further graduate study at Stanford University in the statistical quality control area. Chambers helped Ormond Corry with statistical problems on allocators in the county personal income project and simultaneously became very active developing seminars in Statistical Quality Control. Dr. W. Edwards Deming helped Chambers present his first seminar in Statistical Quality Control at U.T. in the mid-1950's, and by the late 50's, Professor Chambers was elected Executive Director of the American Society for Quality Control, establishing, for his term, national offices of ASQC in the Glocker Building.

The County Income Conference continued to meet periodically over the next 15 years, refining and validating the methodologies. By the late 1960's, the Office of Business Economics (now the Bureau of Economic Analysis) in the U.S. Department of Commerce assumed data gathering and estimating responsibilities and began production and annual release of detailed estimates of total and per capita personal income for all 3000 counties in the nation. This primary set of regional economic accounts meant that future regional researchers could spend more time in economic analysis and less time gathering data. A firm information foundation for consistent regional economic research and policy analysis had been established.

In the fall of 1952, after Frank G. Clement had been elected to his first term as Governor, he turned to the University for accounting and budget development assistance. His call to University President C. E. Brehm resulted in the loan of Harold Read, already on part-time loan from the Bureau to help reform the University budgeting system. Read, a key advisor developing the state's budget, was instrumental in later revision of the state accounting system. Mr. Read helped to recruit Mr. Snodgrass, who had moved from the Bureau to U.T.'s newly established Municipal Technical Advisory Service, to Nashville to become Budget Director in January, 1953. Mr. Hutchison joined Mr. Snodgrass, not directly on the government payroll but as a close fiscal advisor. Later, in 1953, they were joined by Mr. Ed Boling, who had taken a job at Oak Ridge National Lab after leaving the Statistics Department.

In 1954, Mr. Snodgrass was elected Comptroller of the Treasury and Mr. Boling became Budget Director and then Commissioner of Finance and Administration. Mr. Snodgrass remains in state government, having served 16 successive two-year terms as Comptroller. Dr. White and Mr. Read continued as fiscal consultants to the state.

In 1960, Mr. Read became Vice President of Finance for the University. Dr. Boling returned to the University in the 1960's to become a Vice President and, since 1970, President of the University.

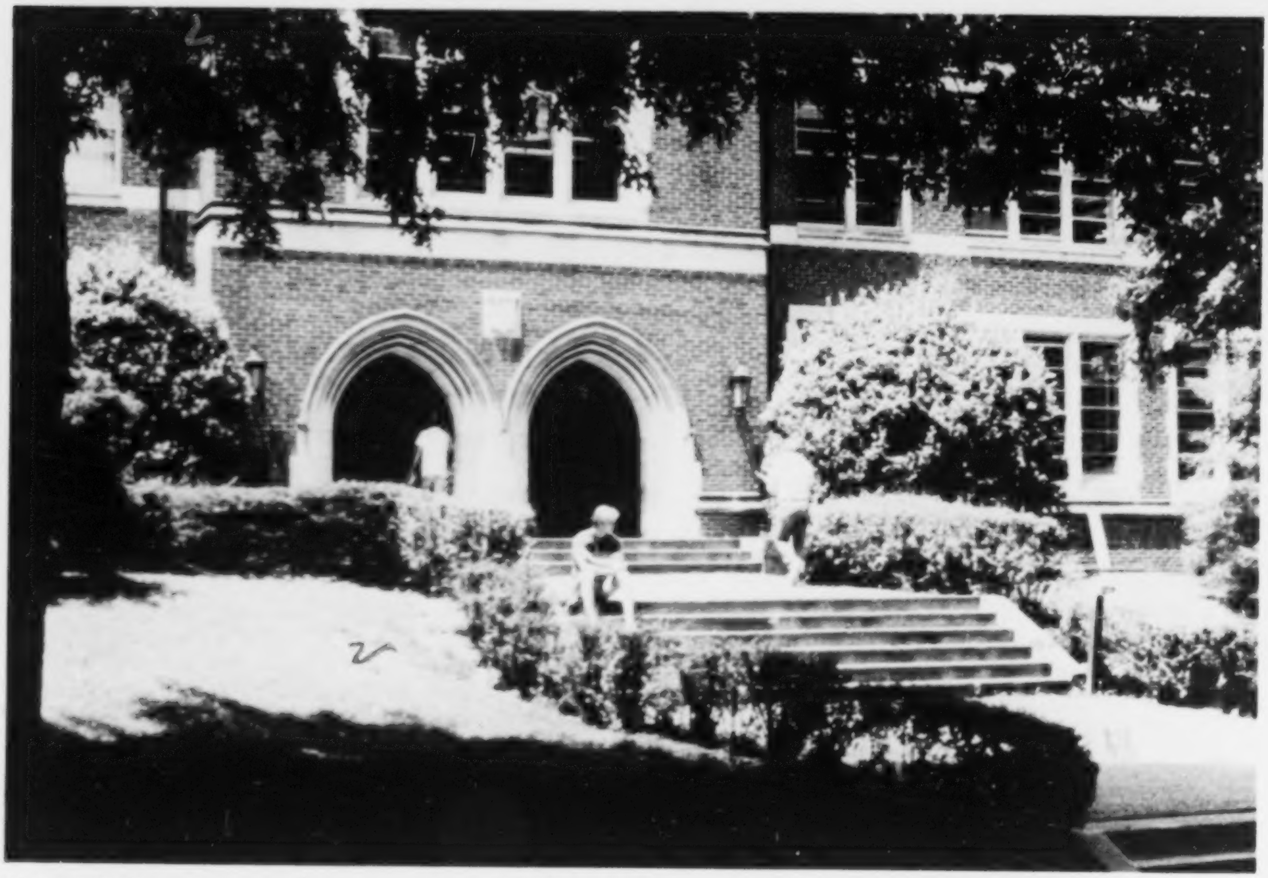
In March 1956, the Bureau initiated publication of **Tennessee Business**, a quarterly magazine for the business community in the state and the first regular publication of the College of Business Administration. Dr. E. O. Dille, Professor of Marketing, was its first editor. This publication was the outgrowth of "Reports on Business Conditions", a quartelry feature in the University **News Letter**, itself published monthly by the Division of University Extension since 1921.

While Bureau development in the second decade was impressive and seeds for future policy impact were sown in a number of different rows, the staff continued to operate on essentially individual research agendas. Dr. White though intimately involved in teaching and directing many Master's theses, continued to advise state government on tax matters. During this period Dr. White served as chairman of the master's thesis committee for James Buchanan, who has just been announced as the 1986 Nobel Laureate in Economics.

The integrity and dedication of the early regional economists, statisticians, and accountants – as emerging public sector councilors and professionals was indispensable to the maturation of the Bureau as an institution of policy-related research. While state-university contacts remained largely personal, there was a feeling that a broader, more institutional relationship was both desirable and achievable.

Steps Toward Institutionalization: The Computer Age Begins – 1957-1966

As noted earlier, through the work of Ormond Corry, the Bureau was active in developing estimates of county personal income and population. This research involved processing voluminous amounts of highly detailed socioeconomic data. IBM tabulating machines were used to aid the work as early as 1955. Initially, equipment located in the state Department of Employment



In August 1952 Bureau offices were moved into the newly completed Glocker Business Administration Building.

Security was used, and later tab equipment in the College's Office Administration program. In the late 1950's, Employment Security installed an **IBM** 650 computer, which was also pressed into service on the Corry project.

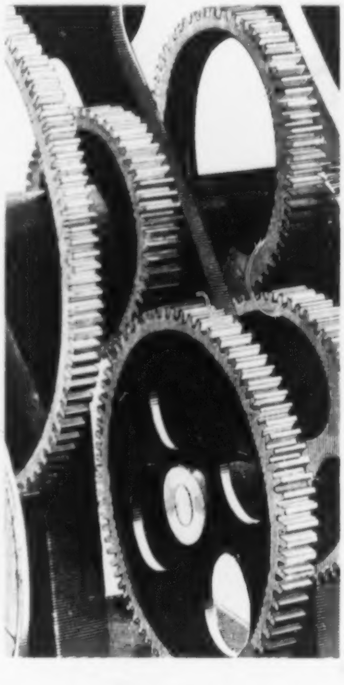
The computer era at the University began in 1961 with the opening of The University of Tennessee Computing Center (UTCC), and installation of an **IBM** 1620. The Bureau contributed funds for the next two summers to permit Professor Ron Boling to work at the UTCC on a Management Simulation game as a teaching tool (the progeny of which is currently in regular, as well as executive development, classroom use on a personal computer local area network). Based on a recommendation from the UTCC, Patricia A. Price was employed by the Bureau in 1962 to assist Mr. Corry in moving the work on county personal income and population estimates to the 1620. In 1965, David A. Hake was hired jointly by UTCC and the Bureau to assist developing computer applications. Through such activities, by the end of the third decade of Bureau existence, College staff had become major on-campus computer users in instruction and research.

Also in this third decade, Mr. Hutchison and Dr. White removed themselves from day-to-day Bureau activity. Bob Hutchison became a Bureau alumnus when on May 1, 1963 he accepted President Andy Holt's appointment as Director of the newly established Government, Law, and Industry Center. Dr. Charles P. White, after 37 years of University service, retired in June, 1965. Both White and Hutchison remained active in state fiscal affairs.

Mr. Hutchison remained a counselor and fiscal advisor to Governors Clement and Ellington through the 1960's. In the 1970's, Mr. Hutchison guided formation of the U.T. Institute for Public Service as the umbrella agency for such groups as the Center for Government Training, the Municipal Technical Assistance Center, the County Technical Assistance Center, and the Center for Industrial Services, becoming Vice President for Public Affairs until his recent retirement.

Upon Dr. White's retirement, the directorship of the Bureau passed in rapid succession. Dr. John E. Lewis served from July 1965 to February 1966 and David I. Verway served as Acting Director until Dr. Alvin B. Biscoe, Jr. became the third Director in July 1966.

In September 1965, Volume 1, Number 1 of the **Tennessee Survey of Business** was published by the Bureau. This monthly publication was the outgrowth of **Tennessee Business**, the College quarterly publication.



The primary mission of the Bureau continued to be to serve government, but support to College faculty research and related services to business and industry were not neglected. Bureau research work increasingly became institutionalized with some requests for assistance coming to the Bureau rather than to individual researchers. Development of a permanent professional and support staff provided the necessary resources to meet the requests of both the public and private sectors.

The Fourth Decade: Broadening the Institutional Base, 1967-1976

The name of the Bureau changed in 1967 to the **Center for Business and Economic Research**. Even though seemingly a minor play on words, the change was intended to symbolize a strategic broadening of the mission to include greater emphasis on external service and extended internal support for funded grant and contract research and professional activities of the faculty.

After Dr. White's departure, Revenue Commissioner Thomas C. Benson helped recruit Dr. Kenneth E. Quindry, then Tax Research Director for Wisconsin state government, to the CBER research faculty in 1968. From CBER over the next few years, Dr. Quindry initiated a variety of public and education finance research projects, provided extensive fiscal counsel in state government and helped to initiate an Office of Tax Research in the Revenue Department. A few years later a former graduate assistant of Dr. Quindry's, Dr. Stanley K. Chervin, became Director of Tax Research.

The **Tennessee Statistical Abstract** was initiated under the direction of Dr. Al Biscoe. A major public service effort, the first Abstract, some 700 pages, was published in 1969 and today remains the sole comprehensive historical statistical compendium on Tennessee, its cities and counties.

In the late 1960's, Dr. Alan Lasater, Statistics Department colleague of Professor Dave Chambers, became editor of the **Journal of Quality Technology**. CBER, with financial support from JQT, provided technical and managerial support for Dr. Lasater's editorial term.

From 1967 to 1969, externally funded grant and contract research activity of CBER and the policy advisory process got a boost from two funded projects. First, the **Tennessee Inter-Industry Study**, developed from primary data, measured input-output relationships between 52 sectors of the Tennessee economy. Directed by economics professors Dr. John R. Moore and Dr. T. H. Lee, the multi-year project funded by the State Legislature spawned several CBER research monographs, a book published by the U.T. Press, and a sensitivity to regional analysis instrumental to later development of the Tennessee Econometric Model in the mid-1970's. Secondly, **The Role of State Government in Science Policy**, a project funded by the National Science Foundation, attracted national attention as it explored the mechanics of the university-political interface and helped establish the philosophical tenets of the University's Institute for Public Service (IPS).

In 1970, the second term of Governor Buford Ellington was coming to a close as conclusions from the Science Policy project were filtering through the consciousness of both university and government officials.

CBER Director, and Science Policy project director, **Al** Biscoe left the Center in 1969 and the College in 1971 to become the first Director of The Institute for Public Service.

In 1970, the **Tennessee Survey of Business** magazine went from a monthly to a bi-monthly with the first annual Economic Outlook issue. Conceived by Dr. James C. Cotham, CBER Director since July 1969, the January, 1970 **Outlook** issue of the **Survey** also marked the first appearance of the **Business Outlook Panel**. For each of the 17 years since, about 150 prominent Tennessee executives representing all industry groups have taken time to respond to a detailed questionnaire eliciting Panel judgment on a range of current economic issues. **Business Outlook Panelists** serving ten or more years are listed in Figure 2.

FIGURE 2

TENNESSEE EXECUTIVES SERVING ON THE ECONOMIC OUTLOOK PANEL*
(Panel Years in Parentheses)

James H. Alexander (17), Executive Director, Insurors of Tennessee, Nashville
Richard W. Cardin (17), Managing Partner, Arthur Andersen & Company, Nashville
James L. Simmons (17), President and Chairman, Tri-City Bank & Trust Co., Blountville
Thomas J. Whatley (17), Associate Dean, Tennessee Agricultural Experiment Station, U.T., Knoxville
Roger A. Daley (15), President and General Manager, Knoxville News-Sentinel, Knoxville
M. E. Greiner, Jr. (15), Vice President, Scripps-Howard Broadcasting Company, Memphis
Howard W. Loveless (15), President, Sealy Southeast, Memphis
Thomas A. Lupton, Jr. (15), President, Stone Fort Land Company, Chattanooga
Merle C. Meyers (15), General Manager, Middle Tennessee Utility District, Smithville
James B. Ragland (15), Chairman, C. B. Ragland Company, Nashville
Lawrence W. Whalen, Jr. (15), Director, The Berkline Corporation, Morristown
Walter Barnes (14), Chairman, First American Bank, Jackson
Charles H. Dean, Jr., (14), Chairman, Tennessee Valley Authority, Knoxville
F. W. Hamilton (14), President, Industrial Development and Warehousing, Inc., Jackson
Donald W. Jackson (14), Commissioner, Dept. of Finance and Administration, Nashville
Carl H. Langschmidt, Jr. (14), Attorney, Boone, Wellford, Clark, Langschmidt & Apperson, Memphis
E. H. Lannom (14), Chairman of the Board, Forcum-Lannom Associates, Inc., Dyersburg
Herbert W. Lindahl, Jr. (14), President, State Industries, Inc., Ashland City
W. Neil Thomas, Jr. (14), President, Thomas, Mann & Gossett, P.C., Chattanooga
John P. Wright (14), President, American National Bank and Trust Company, Chattanooga
Andrew Benedict (13), Senior Chairman, First American National Bank, Nashville
John D. Canale (13), President, D. Canale & Company, Memphis
Ormond C. Corry (13), Research Professor Emeritus, Knoxville
J. Fred Holly (13), Arbitrator, and Professor Emeritus, Knoxville
Richard A. Piske (13), Manager, Building Systems Dept. Allen & Hoshall, Inc., Knoxville
Edmond D. Cicala (12), President, Edmond Enterprises, Inc., Memphis
William A. Fortune (12), Chairman, Fortune Massingill Paris Development Corp., Knoxville
Lon P. MacFarland (12), Chairman of the Board, Middle Tennessee Bank, Columbia
John E. McCutchen (12), President, E. L. Morgan Company, Jackson
George A. Morgan (12), Chairman of the Board and C.E.O., Valley Fidelity Bank & Trust, Knoxville
King W. Rogers, Jr. (12), President, K. W. Rogers and Sons, Inc., Dyersburg
Camillus D. Conway (12), Partner in Charge, Deloitte, Haskins & Sells, Certified Public Accountants, Chattanooga
Robert D. McDowell (12), Vice President, Chief Operating Officer, McDowell Enterprises, Inc., Nashville
W. Lewis Wood, Jr. (12), Senior Vice President, Allen & Hoshall, Inc., Memphis
Alf T. Barnette (11), Executive Vice President, West Tennessee Industrial Association, Jackson
Roger Charest (11), Plant Manager, Tupperware Company, Halls
Robert B. Colbert, Jr. (11), Chairman, Wayne-Gossard Corporation, Chattanooga
Donald E. Gentry (11), Vice-Chairman of the Board, Keith-Simmons Company, Inc., Nashville
William C. Grater (11), President and General Manager, Bowater Southern Paper Co., Calhoun
Thomas A. Griffin, Jr. (11), President, Mid-South Title Insurance Corp., Memphis
Henry D. Jamison, III (11), Chairman of the Board, Jamison Bedding, Inc., Nashville
James W. Lail (11), President, Raines Brothers, Inc., Chattanooga
John M. Upchurch (11), Appraiser and Land Surveyor, Buchanan
Tom N. Austin (10), Chairman and Board of Directors, The Austin Company, Inc., Greeneville
C. Arnold Cameron (10), Attorney, Cameron and Madewell, Cookeville
William V. Chafin, Jr. (10), Executive Director, Maury County Chamber of Commerce, Columbia
James C. Cotham, III (10), Professor, Belmont College, and independent Management Consultant, Nashville
John I. Cox, Jr. (10), Vice President, Tennessee Eastman Company, Kingsport
Minard I. Foster (10), Director, Division of Navigation Development and Regional Studies, TVA, Knoxville
Waymon L. Hickman (10), President, First Farmers and Merchants National Bank, Columbia
W. H. Morris, Jr. (10), Executive Vice President, Southern Supply Company, Jackson
Robert A. O'Neal (10), Senior Vice President, Red Food Stores, Inc., Chattanooga
James S. Putman (10), President, Tennessee Farmers Mutual Insurance Company, Columbia
William H. Swain (10), Chairman of the Board and President, First National Bank, Oneida
Carl W. Truebe (10), Plant Manager, ICI Americas, Inc., Chattanooga

*Last-known affiliation.

Dr. Cotham left CBER in June, 1971 to become Associate Dean of the College, initiate the **Tennessee Executive Development Program**, and serve as its first Director. Dr. David A. Hake became the fifth director of the Center in July 1972, following a one-year term as acting director. TEDP and Outlook Panel founder Cotham, himself now a 10-year Business Outlook panelist, left the University in 1973. He has held executive positions in energy, communications, and banking industries, and from 1979 to 1981, in Tennessee government as Commissioner of the Department of Economic and Community Development.

The **College of Business Administration Working Paper Series** began in fall, 1971 with Working Paper #1. The purpose of the series is to encourage peer review of faculty scholarship prior to formal journal submission and publication and also to document the complete text or full results from original research normally abbreviated for academic journal purposes. The Papers are distributed internationally to a select list of scholars and research libraries. CBA Working Paper #229, by Dr. Mary Sue Younger, Professor of Statistics, will be released in November, 1986.

The **Faculty Research Fellowship Program** started in 1972 with seven awards totalling $19,490. Coordinated in CBER, the Program is funded by income from the College's Capital Gifts Endowment. Eighteen Faculty Research Fellows designated for the 1985-86 Program will share $103,000 in direct-cost support of their research as described in a formal proposal. In the 14-year history of the program, over $568,000 has been awarded in

The Tennessee Econometric Model, developed in 1973, is a strategy for institutionalization of the communication linkage between and among regional social scientists and decisionmakers in the public and private sectors.

support of 141 Faculty Research Fellowships.

The pace of fiscal counsel picked up in 1972 as Governor Winfield Dunn appointed a state-wide panel of prominent citizens and executives to the **Tennessee Tax Modernization and Reform Commission**. Dr. Kenneth E. Quindry served as director of the staff to the Commission that, over its two-year life, produced more than a dozen reports covering a comprehensive review of all aspects of the state tax system in the context of a rapidly changing world and national economy.

The **Tennessee Econometric Modelling Project (TEM)**, begun in 1973, is a tool designed to provide CBER with an internal intellectual focus and unify the external view of the Center.

In 1972, with significant support through the Tennessee State Planning Office, a three year **Consumer Price Index Project** for urban areas in Tennessee was developed, and as part of this funding, the extensive data bases and major computer software required for developing an economic forecasting and simulation model were acquired. In a parallel development, as an abbreviated complement to the then triennial **Tennessee Statistical Abstract**, a **Tennessee Pocket Data Book** was put together with editions published by CBER in 1973, '74 and '75 partly as an annual update of key economic data in the Abstract, and also to provide an annual vehicle for an aggregated one-year forecast of state total personal income and employment.

The first Tennessee Econometric Model (TEM) was completed in early 1975. Built on an annual data base of several hundred state and U.S. economic time series, it consisted of about eighty equations. The marriage of the Pocket Data Book notion and the Tennessee Econometric Model produced the first proposal, with Professor Ken Quindry as project director, for an Economic Report to the Governor. The TEM-enabled ten-year economic forecast was included in the **1976 Economic Report to the Governor**, the first of what has become an annual series, published by the Tennessee State Planning Office and distributed widely across the state.

In support of increased College emphasis on externally funded research, CBER sought additional funding for certain activities of its research faculty, offered CBA faculty assistance in location of funding sources and also proposal preparation services. College-wide grant and contract research funded by foundations, state and federal government was built from essentially zero in the earlier years to a $390,000 total in the first five years of the fourth decade, to $1,000,001 from fiscal 1971 to 1976, the last five years of the decade.

The UT,K campus Research Incentive Fund, tied to the level of indirect costs covered by funded research activity, provided sufficient funds to enable the College to establish, in 1977, the **Faculty Publications Support Service** as part of the CBER publications group. The purpose of this service was to provide professional manuscript services – typing, editorial, and graphics support – for the non-externally supported research activities of the College faculty.

A Decade of Service, 1977-1986

For a number of years, staff of the Center have worked to provide a macroeconomic framework to support increasingly effective policy analysis in the state. As a tool, the Tennessee Econometric Model provides an ongoing and cumulative linkage between theory and analytics on the one hand, and reality as represented by state economic and social data on the other hand. The fundamental value of the TEM is that it is a process rather than a product. Viewed as a process, it can help promote economic education and serve as

FIGURE 3

SOCIAL SCIENTIST CONTRIBUTORS TO THE STRUCTURE OF THE TENNESSEE ECONOMETRIC MODEL*

Richard A. Engels, University of Chicago, U.S. Bureau of Census
Charles B. Garrison, University of Kentucky, The University of Tennessee
** David A. Hake, The University of Tennessee, The University of Tennessee
Kenneth E. Quindry, University of Kentucky, Professor Emeritus, Economics, The University of Tennessee
Patricia A. Price, The University of Tennessee, The University of Tennessee
John R. Kort, The University of Tennessee, U.S. Bureau of Economic Analysis
Hui S. Chang, Vanderbilt University, The University of Tennessee
** Richard D. Gustely, Syracuse University, deceased
Neil O. Alper, University of Pittsburgh, Northeastern University
** William C. Goolsby, University of Wisconsin, The University of Tennessee
Robin Watson, The University of Tennessee, Central Intelligence Agency
Glen E. Schuler, Jr., University of Houston, Tenneco Corp.
** Stephen P. Coelen, Syracuse University, University of Massachusetts
Niles C. Schoening, The University of Tennessee, University of Alabama, Huntsville
** William F. Fox, Ohio State University, The University of Tennessee
Richard A. Hofler, University of North Carolina, The University of Tennessee
John W. Mayo, Washington University, The University of Tennessee
Susan Bott, The University of Tennessee, The University of Tennessee
Charles C. Campbell, The University of Tennessee, Mississippi State University
Stanley C. Duobinis, Ohio State University, Chase Econometrics

*Since the TEM project inception in 1973, the intellectual contributions of these social scientists, all former or current CBER staff, are identifiable in the structure of one or another component of the Tennessee Econometric Model. These are listed in chronological order of first influence. Following each person's name is his/her graduate institution, and last known current affiliation. **Denotes TEM Project Directors.

neutral ground for objective communication between public and private sector persons of diverse attitudes, education and experience. TEM thus becomes a strategy for institutionalization of the communications linkage between, and among, regional social scientists and decision makers in the public and private sectors.

From the viewpoint of the research institution, the modelling project enables cumulation of intellectual contributions beyond physical tenure. Figure 3 lists former and current CBER research faculty or staff, who have contributed to the structure of the TEM, from 1973 to 1986, roughly in chronological order of first influence.

Upon retirement of Dr. Kenneth E. Quindry in 1982, Dr. William F. Fox assumed responsibilities as Director of Research and CBER Associate Director.

TEM – Process and Product

A series of gears is used in Figure 4 to symbolize the interaction between a wide range of activities during this decade related to the Tennessee Econometric Modelling Project and associated computerized Economic Data Bases.

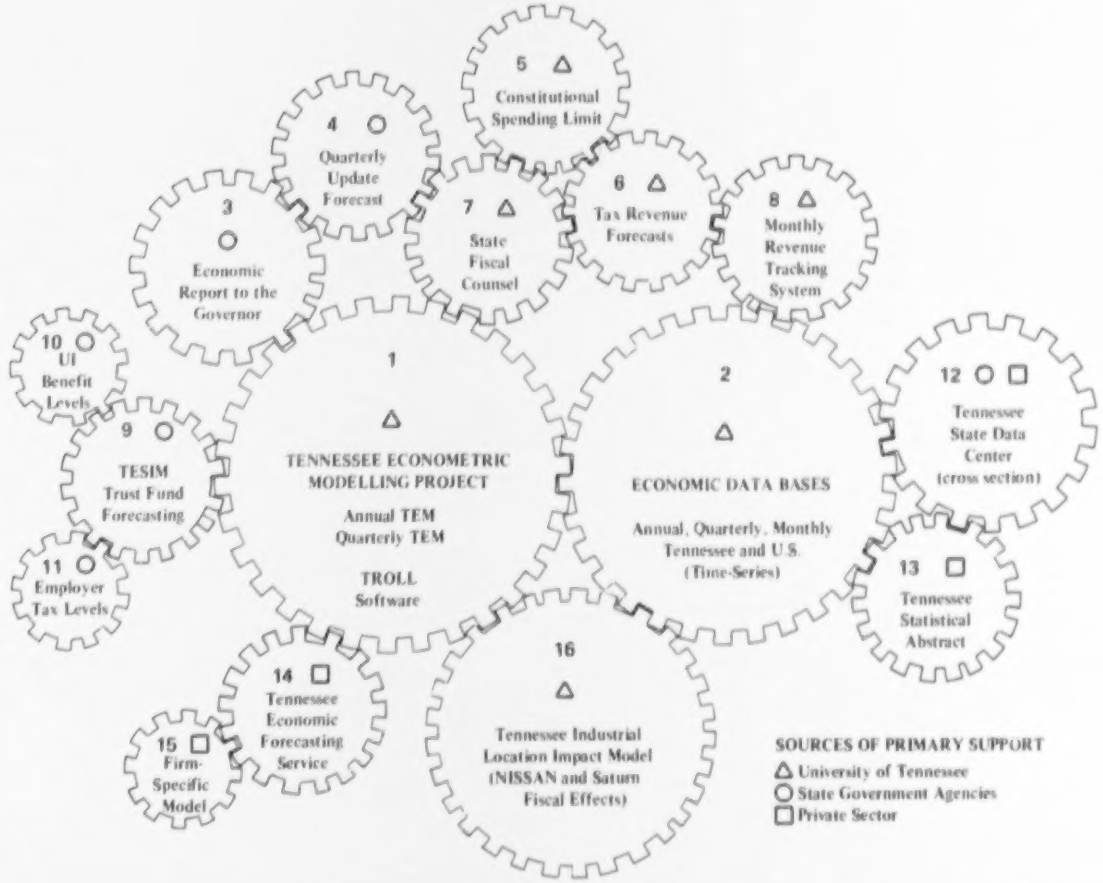
Gear 1 – TEM Project, is actually several models: Annual TEM, based on annual data, and since 1983, Quarterly TEM. Each model contains about 225 total equations. The annual model (150 structural equations) is used to develop ten-year trend forecasts for about 150 separate Tennessee variables. The quarterly model is used to develop forecasts for about 90 different Tennessee business cycle variables over ten future quarters.

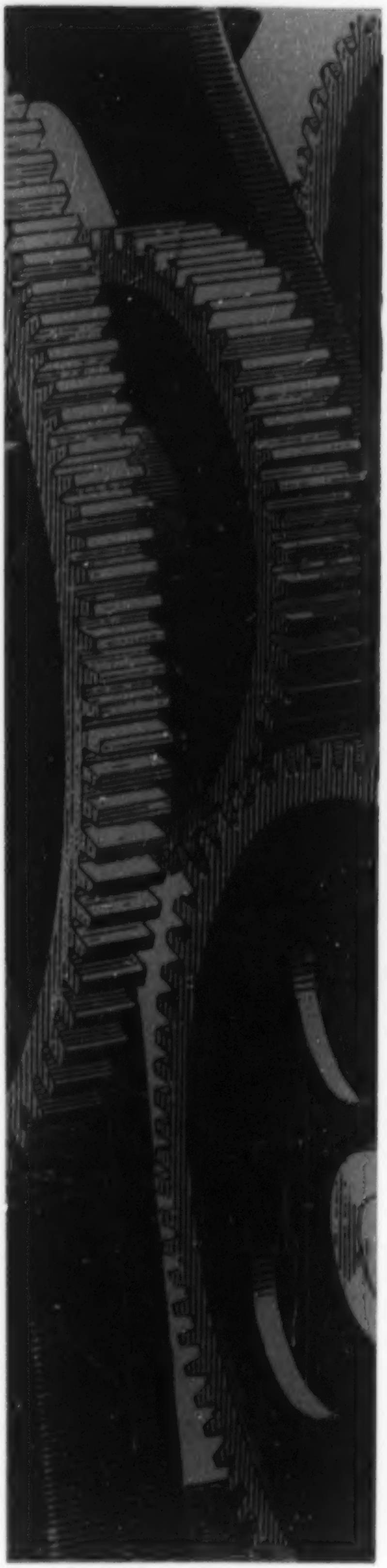
Gear 2 – Economic Data Bases. Related to the models is a larger compilation of economic information. Several thousand time series of annual, quarterly, and mohthly data are maintained by CBER staff at the sub-state, state, and national levels.

Gear 3 – Now in the 13th year, the **Economic Report to the Governor** contains TEM-produced trend and business cycle economic forecasts and

FIGURE 4

THE CENTRAL ROLE OF THE TENNESSEE ECONOMETRIC MODELLING PROJECT


5 △
Constitutional Spending Limit
4 ○
Quarterly Update Forecast
3 ○
Economic Report to the Governor
7 △
State Fiscal Counsel
6 △
Tax Revenue Forecasts
8 △
Monthly Revenue Tracking System
10 ○
UI Benefit Levels
1
△
TENNESSEE ECONOMETRIC MODELLING PROJECT
Annual TEM
Quarterly TEM
TROLL Software
2
△
ECONOMIC DATA BASES
Annual, Quarterly, Monthly Tennessee and U.S. (Time-Series)
12 ○ □
Tennessee State Data Center (cross section)
9 ○
TESIM Trust Fund Forecasting
11 ○
Employer Tax Levels
13 □
Tennessee Statistical Abstract
14 □
Tennessee Economic Forecasting Service
15 □
Firm-Specific Model
16
△
Tennessee Industrial Location Impact Model (NISSAN and Saturn Fiscal Effects)
SOURCES OF PRIMARY SUPPORT
△ University of Tennessee
○ State Government Agencies
□ Private Sector



analyses. The quarterly data have been designated as the official forecast for state government internal programming and future budget planning purposes. The annual state government budget document is based, in part, on this report.

Gear 4 – The **Quarterly Update Forecast** is also developed from Quarterly TEM. This makes possible quarterly review of the extent to which the budget document continues to track the economic forecast on which it was originally based.

Gear 5 – Since 1978, the **Tennessee Constitution** limits growth in state expenditures to estimated growth of the state economy. CBER personnel were involved in deliberations preliminary to the 1977 Constitutional Convention and, more importantly, utilized TEM for simulations of the economic effect of various alternatives in legislative deliberations during the enactment of enabling laws. State law provides that TEM-produced projection of personal income be the source of the measure of the state's economic growth.

Gear 6 – Tax Revenue Forecasts. Two of the components of input to the state's revenue forecasting process stem from the TEM quarterly and annual forecasts.

Gear 7 – State fiscal counsel is enhanced because of understanding gained by research personnel during completion of these projects. This increased understanding operates as feedback to improve the structure of the Tennessee Econometric Model. Thus, the better the tool, the more numerous are its applications, and vice versa.

Gear 8 – Monthly Revenue Tracking System. Tax collections are formally entered into a revenue tracking system reviewed monthly by CBER fiscal economists. This serves as an early indicator of major differences between expected and actual revenue. For the regional economist, it also calls attention to unexpected economic behavior, possibly signalling economic shifts before traditional quarterly economic data are available.

Gear 9 – TESIM, the **Tennessee Employment Security Insurance Model**, was developed for the Department of Employment Security. This model of about 25 behavioral equations, enables quarterly review of the most likely two-year future of Unemployment Trust Fund outputs (unemployment insurance benefits paid, **Gear 10**) and inputs (employer tax levels, **Gear 11**) and outputs.

Gear 12 – The Tennessee State Data Center, since 1981, is a joint project of the Tennessee State Planning Office and CBER. Cross-sectional data from censuses of population, manufacturing, and trade are made available as computer tapes or as special computer runs to agencies and individuals requesting such detailed information directly or through a statewide network of 14 Data Center Affiliates. CBER project staff also publish the biannual **State Data Center Newsletter**, disseminated to about 700 data users in Tennessee.

Gear 13 – The Tennessee Statistical Abstract is a 750-page composite of economic and socioeconomic historical data on the state, published triennially since 1969 and annually since the 1983/84 edition. In addition to state-level data on a wide range of subjects, there is also data at the sub-state (county and city) level. Data for other states are also given in many areas for comparative purposes.

Gear 14 – The Tennessee Economic Forecasting Service offers quarterly forecasts of the Tennessee economy and economic data services in a subscription-based system designed for business firms in the private sector. The main differences between the public and private sector services are the degree of support services given by CBER staff and the method of funding.

Gear 16 – Consultations in the early 80's with local governments on the economic and fiscal effects of the Nissan, USA plant location in Rutherford County led to development of TILI, the **Tennessee Industrial Location Impact Model**, funded by an EDA grant through the state Department of Economic and Community Development. TILI was used successfully in summer 1985 negotiations involving the economic, demographic and fiscal impact of the Saturn plant in Maury County. Built on the county-level data resources of the Center, the model also uses future Tennessee price levels as forecast through TEM.

Related Regional Research

There are a number of other regional research opportunities with indirect, rather than direct linkage with TEM and associated data bases. The following list is representative of such projects undertaken at CBER in its fifth decade:

*Slow state revenue growth led to a study of the stability of the state sales tax and a resulting improved capability to forecast revenues across business cycles. The forecasting technique allows for variable tax elasticities of income.

*The new federalism has delegated to the state the former federal function of distributing Community Development Block Grant funds. This was the impetus for discussions with the Tennessee Department of Economic and Community Development on appropriate distribution techniques and development of fiscal capacity measures to estimate the effort and ability of county and city governments to raise revenues. First estimated in 1983, these fiscal capacity indexes were reestimated in 1985.

*CBER continues to be involved in issues related to tax revision. A business tax report was financed by the Department of Economic and Community Development and a report submitted in 1977. CBER personnel cooperated with the governor's task force and the special task force for small business in 1983 and 1984. In both instances business tax reform was the central topic of investigation and recommendation.

*Research in scale economies and efficiency in local government service delivery remain topics of interest, and research in these areas has been partially financed by the Economic Research Service of the U.S. Department of Agriculture.

*Tennessee Department of Employment Security interest in the state's persistently high unemployment rate relative to the U.S. rate led to funding for a study of the full employment unemployment rate of all 50 states.

*Disposal of spent nuclear fuel from electricity generation plants poses a serious national and international dilemma. The U.S. Department of Energy proposed that several sites in Tennessee be evaluated as temporary storage facilities. At the request of state government officials, CBER studied the direct and indirect economic and fiscal impact of these proposed sites. Economic assessment of some associated externalities was also undertaken.

*The Center has continued its assistance to the Department of Finance and Administration and Revenue on revenue estimating, monthly tax collection monitoring, and tax policy consultations. A 1985 report on border tax problems was provided to the Special Joint Legislative Task Force on State and Local Tax Structure. Also published in the Research Monograph Series, it has become a highly visible and important document on border tax problems.

*The rate of business firm "births" compared with the rate of "deaths" can form the background for effective economic development stimulation legislation, particularly at the local government level. Major funded studies of these processes in the state and the nation are currently being undertaken by CBER and Department of Employment Security staff.

A Symbiotic Relationship

Whether TEM-linked projects led to opportunities in other regional policy related research, or vice versa, the relationship is clearly symbiotic. It does seem that both kinds of policy-analytic work benefit from their existence in the same organization. Nevertheless, grant/contract research involving CBER staff as project director totalled $2,810,000 over the fifth decade, more than a twofold increase over the previous ten-year period.

An international dimension to CBER's regional research activities has emerged in recent years, with CBER staff serving in policy advisory capacities, assisting the Agency for International Development, which works with governments of Egypt, Haiti, and the Phillipines. These advisory activities have recently been extended to the Hungarian government. For fall 1986, the research group is joined by two Visiting Research Associates, senior executives from the Hungarian Ministry of Industry. The research agenda includes regional macromodelling, information systems design, and work toward a Tax Policy Roundtable, focussing on tax policy incentives for industrial development. Projections include papers by CBER and other U.S. fiscal economists to be presented at a seminar held in Budapest to be attended by select Hungarian enterprises and government executives.

Research Support: Publications, Data and Technology

The **Survey of Business**, a quarterly publication since 1978, remains a primary conduit of business and government research and information to the Tennessee executive. The annual **Economic Outlook Issue** features the **Business Outlook Panel** and the current economic forecast and analysis by CBER's economics staff. Senior members of the College faculty occasionally serve as Consulting Editors for an entire issue of the **Survey**, developing, through their professional contacts and academic peers nationwide, articles around a topical theme of regional or national significance.

In October, at the annual meeting of the Association for University Business and Economic Research, the **Survey** received the 1986 AUBER award for the best continuing publication.

Recent **Survey** "themes" have included: **The Changing Bank System**, **New Trends in Labor Relations**, **Alternatives for Tax Restructure in Tennessee**, **Technology in Tennessee**, **Deregulation**, **International Trade**, **Challenges in Distribution**, and **Quality**

Management – specifically devoted to the CBA Management Development Center's heavily attended programs in use of Statistical Process Control. . . a legacy of the 50's and 60's work of Chambers and Lasater.

Survey theme issues have included articles by such authors as: President and CEO, General Motors; Editor, Industrial and Labor Relations Review; President and CEO, Campbell Soup Company; President, Saturn Corp.; Vice-President of the United Automobile Workers; Chairman, National Labor Relations Board; Director, Oak Ridge National Lab; Deputy General Counsel, U.S. Department of Transportation; Senior Economists, Federal Home Loan Bank Board; Governor, State of Tennessee; and Chairman, Joint Fiscal Review Committee of the Tennessee Legislature.

The **Tennessee Statistical Abstract** project, along with the State Data Center, helps unify the statistical data resources of CBER for providing an economic information service to the public and to faculty research personnel. The shift to an annual basis in 1983/84 has helped improve internal and edition-to-edition consistency and also, significantly helps to institutionalize quality assurance and integrity of the Center's unique commodity, its economic and socioeconomic databases. An unsolicited 1985 letter from the Chief, Statistical Compendia Staff, U.S. Bureau of the Census volunteered, "If we were judging a contest for the best state Statistical Abstract, our vote would go to yours." There are more than 500 prepublication "standing orders" for the TSA.

The **Socioeconomic Research Monograph Series** lists two dozen titles since 1977. Three of seven monographs published since 1984 are:

***Maximizing Economic Growth with Industrial Development Bonds**, provides a philosophy and uniform set of issuance guidelines that would allow state governments to achieve maximum economic benefits for the state from a limited number of IDB's.

***Changes in Tennessee: What the 1980 Census Shows**, highlights major changes in the population of the state as a whole as well as the 95 counties, and

***Business Location Determinants in Tennessee**, based on an extensive survey of 325 manufacturers who located new facilities or expanded existing ones within the state between 1980 and 1983, highlights the factors firms weigh most heavily in the site location process.

One measure of faculty research output involves the number and quality of refereed journal articles published. The **Faculty Publications Support Service** was started in July 1977 as an incremental cost addition to CBER's Publications Group. Its purpose was to help College faculty with the manuscript phase of the research process. From July 1977 to June 1986, some 1,111 separate research manuscripts of the faculty were completed through the FPSS. Using special purpose text processing equipment, revisions of these manuscripts generated another 3,367 FPSS logged jobs, with a total letter quality manuscript page count of 88,859. On average, 52 faculty per year each completed from two to three research manuscripts. Since 1977, total and average academic journal publication credits of the CBA faculty have increased in number and also in reputation of journal. To the extent that there is a positive correlation between quantity and quality in this context, the FPSS is fulfilling its mission.

Communications Technology

Few of the outcomes outlined in this article would have been possible without computers nor without the people who understood their strengths and their limitations and were willing to push beyond the latter. Sophisticated mainframe software has been used by CBER for research and faculty support for 30 years. There have always been one, or at most two programmers on the staff. The explosive growth of academic and business microcomputing has led to adoption of software and hardware standards in the CBA – part of a strategic plan for technology integration in all programs of the College. From a CBER computer staff of one in 1984, the Computer Resources Group (CRG), has grown to eight full and fifteen part-time persons in response to these new needs. Since late 1984, about 300 personal computers have been installed throughout the College. Faculty, research staff, management and many support personnel have received specially configured personal workstations in addition to about 55 PC's in two student labs. Nearly all systems have hardwire access to UTCC mainframes or the College's textprocessing and manuscript minicomputer. Training courses for faculty and staff have been developed and taught principally by CRG staff.

The IBM Corporation selected the College's strategic approach to technology integration as the subject of an Academic Information Systems (ACIS) Application Brief. ACIS averages about 20 briefs from all applications of computing in higher education each year. The College of Business Administration at UT,K joins the Business Schools at Duke, MIT, and Columbia as the fourth business school in the nation with an application unique enough to warrant a publication intended to demonstrate the utility of IBM products. Released in summer, 1986, IBM's marketing use of the Brief included its mailing to Presidents and Provosts of colleges and universities in the U.S. and abroad.

1986 CBER Staff and Organization

Staff of CBER are housed in three locations of the Glocker Business Administration Building. Organizationally, the Center consists of a Research Group supported by Administrative, Publications, Data and Computer Resources Groups as shown in Figure 5.

Dr. William F. Fox, Director of Research, heads a primary research team consisting of four faculty jointly appointed in the Department of Economics, a Senior Research Associate, Research Assistant and several Graduate Research Assistants. Within the matrix-type organization, these personnel are complemented by staff, assigned as needed to work on specific projects, from the supporting resource groups:

If implemented well, along a strategic path, the new technology can offer unparalleled opportunities to make a difference in decision quality in the public and private sectors.

Administrative Resources Group – This unit provides managerial, administrative and secretarial support for the entire Center staff.

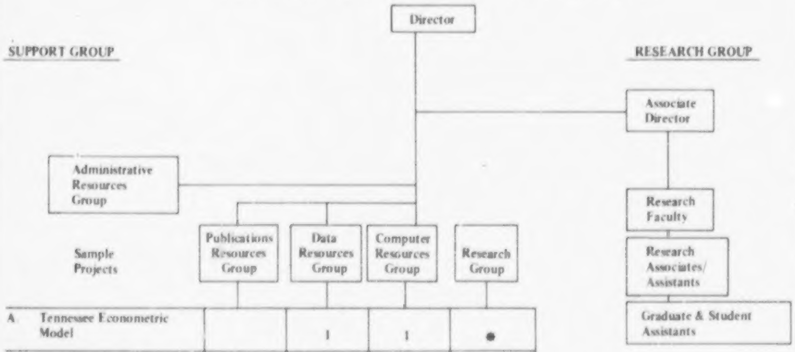
Publications Resources Group – The publications group provides manuscript (keyboarding, editorial, and presentation graphics) services for CBER staff and, through the Faculty Publications Support Service, for the College faculty. It is also responsible for assembling and publication support for the annual **Tennessee Statistical Abstract**, the quarterly **Survey of Business**, research grant and contract proposal preparation and research reports and other college-sponsored reports and papers.

Data Resources Group – Collection, storage, dissemination quality and integrity of statistical data is centered in this unit. Major project responsibilities are technical editorial functions for the **Tennessee Statistical Abstract**, operation of the State Data Center, design and coordination of survey research activities, and provision of economic data services to the public.

Computer Resources Group – Organized in 1985, this unit is a vital part of the CBA commitment to integrate computer technology into the College curriculum and provides computer support for CBER research activities. Included in this responsibility is the purchase, distribution, and maintenance of the college's personal computers and communication networks, faculty and staff training, operation of microcomputer laboratories for the College, and general support for the College computer system.

FIGURE 5

CBER PROJECT MANAGEMENT AND ORGANIZATIONAL STRUCTURE



Director
SUPPORT GROUP
RESEARCH GROUP
Associate Director
Administrative Resources Group
Research Faculty
Research Associates/ Assistants
Graduate & Student Assistants

Sample Projects	Publications Resources Group	Data Resources Group	Computer Resources Group	Research Group
A. Tennessee Econometric Model		1	1	●
B. Fiscal Research and Services	2	1	2	●
C. Economic Report to the Governor	2		1	●
D. Survey of Business	●	2		1
E. Faculty Publications Support Service	●			
F. Computer Based Instructional Materials	1		●	
G. Tennessee Statistical Abstract	1	●	2	

KEY ● denotes project responsibility
1 denotes major resource supports
2 denotes secondary support role

Reflection and Opportunity

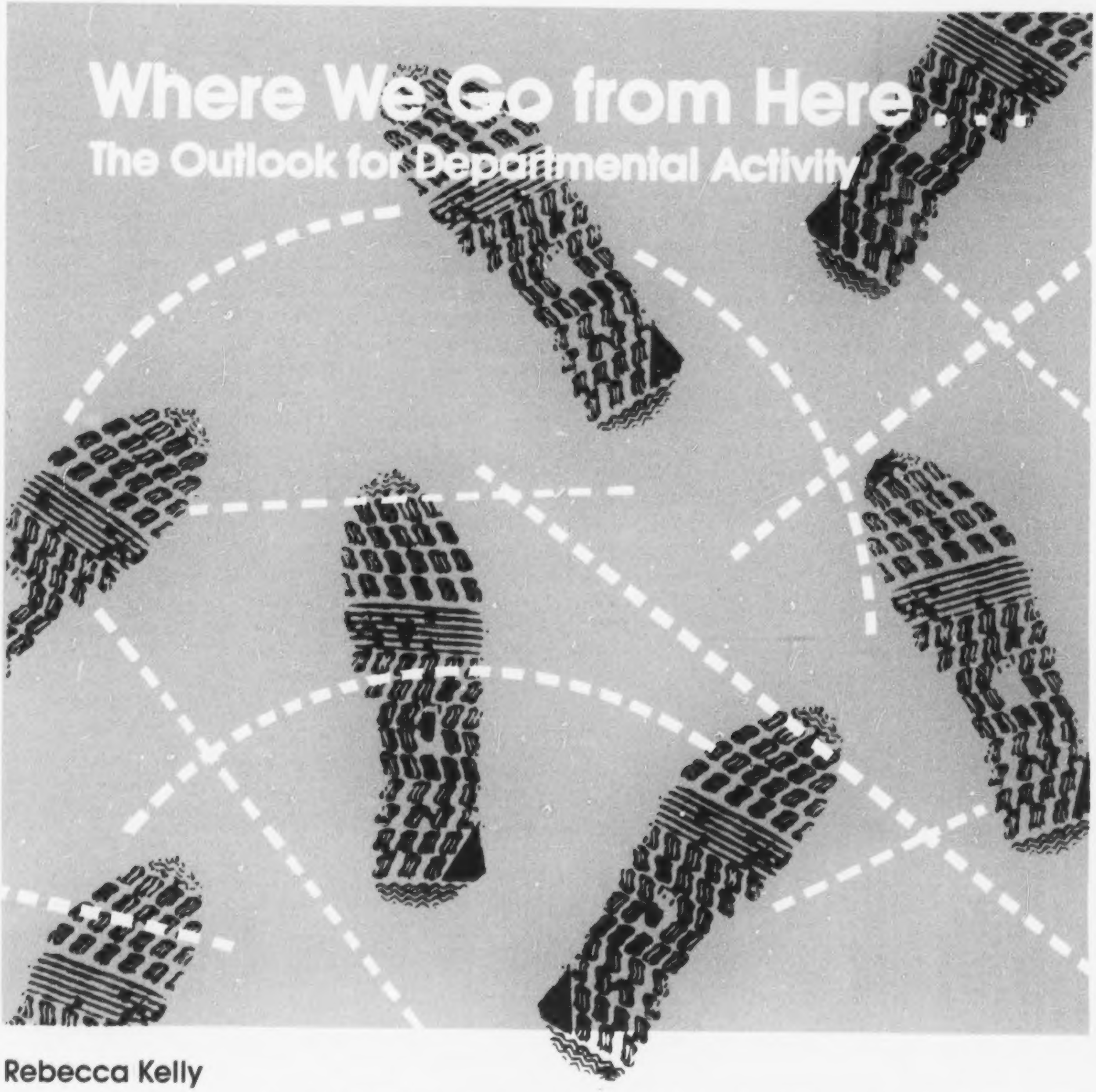
The mission as Dr. White described it nearly fifty years ago – to bring forth and disseminate new knowledge – has been embraced and strengthened over the years.

The decade 1977-1986 ending the first fifty years in the life of CBER may have been the most eventful and productive in its history. From its beginning as an informal organization overseen by a single individual, it has grown to provide regional economic and socioeconomic research and service to business industry and government in Tennessee, to provide research and publications supporting service to the College faculty, and to support the College's integration of computer and communications technology.

Technology provides enormous potential for extending the effectiveness of each dimension of CBER activity – data acquisition and storage, economic analysis, organization and transfer of information, dissemination of findings, and policy advisory services. If implemented well, along a strategic path, this new technology can offer unparalleled opportunities to make a difference in decision quality in the public and private sectors. But with opportunity comes the risk of loss of the organizational trust and credibility built over fifty years by the dedication and integrity of many. However, that risk is far outweighed by the opportunity to serve as a vital **Source** in the future Information Age in Tennessee.

Where We Go from Here. . .

The Outlook for Departmental Activity



Rebecca Kelly

Progress is a journey often traveled by way of an indirect path; and change, from which progress generally evolves, frequently encompasses a rearrangement of priorities. A number of radical changes within the College of Business Administration in the last several years have expanded the horizons of faculty, staff, administration, and students. Change has been the catalyst from which has sprung a new competitive spirit, a new focus on achievements, and a reevaluation of goals.

One of the most radical changes has been the integration of technology into the College in the form of 271 computers for faculty, staff, administrators, and graduate students. In addition, almost 30 software packages have been acquired to meet the various needs of research and teaching demands, and dozens of classes have been taught and are still being scheduled to institute new programs and methods.

Another factor encouraging change is the projected conversion from the quarter system to a semester system in 1988. The ensuing restructuring of courses and concentrations has engendered not only reevaluation of departmental offerings but in many cases a new philosophy of purpose.

In the summary of departmental objectives which follows, many common factors are evident: the increased reliance on the new technology, the projected influence of the semester format, and more than ever, a greater emphasis on excellence in every area of the College.

ACCOUNTING AND BUSINESS LAW

Jan R. Williams, Chairman

An emphasis for the Department of Accounting and Business Law in the coming years will be the integration of computer technology into each of four distinct degree programs: the undergraduate and Ph.D. degrees in Business with a major in accounting, the Master of Accountancy degree, and the MBA degree with an emphasis in Controllership, initiated in 1985. A major goal is to produce graduates who have learned to apply modern technological skills within the several different areas of accounting – financial and managerial accounting, systems, auditing, and tax.

During the 1985-86 academic year the department completed a successful fund-raising campaign in which over $1,700,000 was committed to the future of the accounting programs. Important activities now include establishing priorities for use of these funds, as well as beginning an implementation program which will add a degree of excellence to existing programs.

The Accounting Excellence Fund will specifically support excellence in teaching and research through the provision of scholarships and fellowships for outstanding undergraduate and graduate students as well as supplementing faculty efforts through distinguished professorships, research grants, the acquisition of supplemental library and software materials, and other development programs.

Consistent with University plans to change from the quarter to the semester system in fall 1988, the Accounting Department continues to buffer the impact of the curriculum transition. One significant change under the semester format will be felt at the undergraduate level, where elective courses will no longer be offered.

ECONOMICS

Ann Mayhew, Chairman

The designation of a Chair of Excellence in macroeconomics, the changing of department heads, and an external review are all events which have shaped the direction of the Department of Economics and set in motion other changes to come in the future.

Now, under the rubric of the finance major, students may obtain broader training in a number of fields by selecting the appropriate electives.

Funded equally by the state and private donations, a Chair of Excellence in macroeconomics has been filled by Dr. Paul Davidson from Rutgers University. Dr. Davidson's studies focus on international macroeconomics, specifically the economic behavior of industrial nations such as the U.S. and European countries. He will continue to edit the **Journal of Post Keynesian Economics**, a project in which he was involved at Rutgers.

In coordination with the Distinguished Scientist Program, a search is currently underway for a microeconomist to join the economics faculty as a Distinguished Professor on a half-time basis, sharing related responsibilities at ORNL.

Another recent change is the appointment of Dr. Anne Mayhew as acting department chair, following the term of Dr. William E. Cole. Established programs in the department which continue are the microworkshop and the John L. Greer Lecture Series.

The recently initiated practice of actively recruiting economics undergraduate majors from the ranks of outstanding high school students will continue.

In addition to Omega Delta Epsilon, an honorary society for graduate and undergraduate economics majors, there are plans to form an undergraduate economics club to host lecture series and social events for students, faculty, and staff.

As a means of keeping up with economics alumni and allowing them to keep abreast of activities in the department, a newsletter, ECONOMICS LETTER, has recently been circulated. The response has been so heartening that periodic receptions are being scheduled for graduates in major cities to coincide with major economics meetings.

FINANCE

William W. Dotterweich, Chairman

In 1985 the Department of Finance supported 464 undergraduate majors, 50 MBAs with a finance concentration, and 15 Ph.D. candidates. Plans for the future involve more emphasis on the Ph.D. program, which currently is restricted by staff limitations to three to five admissions per year. Efforts are aimed at substantially increasing the number of doctoral candidates admitted each academic year to meet the current market demand of 3.6 available positions for each new Ph.D. in finance.

The current curriculum leading to a degree in finance grew out of a mixture of several different majors, including public finance, financial management, banking, real estate, and insurance. Now, under the rubric of the finance major, students may obtain broader training in any of these fields by selecting appropriate electives. This is particularly true for MBA students with a concentration in finance. The finance concentration allows students the flexibility to tailor their programs to fit particular career goals and to prepare for one or more of the following specialty areas: investment management; real estate; corporate financial management; banking and financial institutions; insurance and risk management; and financial planning and services.

The changeover to semesters in 1988 projects a decrease in the number of required "core" courses in finance for all majors in the College, but anticipates an increased emphasis on concentration electives available for majors.

Participation in the new MBA concentration of Entrepreneurship and New Venture Analysis and the Master of Science degree in Real Estate Development are also being pursued. The proposed degree program in real estate development will prepare students for coordinating land acquisitions with

> *The incorporation of computers as part of the coursework in management information systems has resulted in a dramatic increase in time for devotion to concepts and applications.*

emphasis on the long-term and large-scale aspects of development. This program will feature an interdisciplinary approach, including faculty from the College of Architecture, the School of Planning, and the Department of Finance.

The department has three distinguished professorships -- one in finance and banking, one in financial institutions, and one in risk management and insurance.

MANAGEMENT

H. Dudley Dewhirst, Chairman

Specific changes made in the Department of Management's academic program reflect changes presently occurring in industry – for example, the shift of national attention toward the effective management of manufacturing and service industries. This shift is most readily seen in the increased demand for courses detailing just-in-time inventory systems. Faculty research and coursework at all levels, and especially at the Ph.D. level, will also reflect increasing emphasis on strategic management (long-term) issues.

One of the most significant recent changes in management is the influence of increased use of computers, which act as viable tools to facilitate the process of management information systems. The recent widespread use of this process in a broad range of industries has led to the formation of a multidisciplinary committee (management, accounting, logistics) to explore the establishment of a major in management information systems. The incorporation of computers as a part of the coursework in management information systems has resulted in a dramatic increase in the amount of available time for devotion to concepts and applications rather than mechanics.

Management currently has 20 faculty members, more than 100 undergraduate majors, 40 MBAs and 5-6 Ph.D.s per year.

MARKETING AND TRANSPORTATION

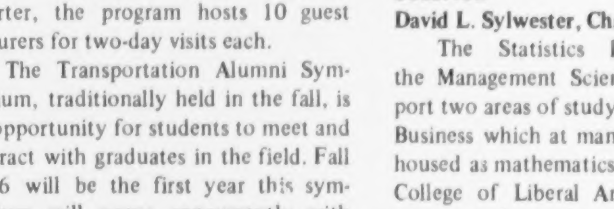
David J. Barnaby, Chairman

The Department of Marketing and Transportation encompasses two distinct programs, marketing and transportation/logistics, which co-exist under the framework of one department for organizational and funding reasons.

The transportation/logistics program, although smaller than its marketing counterpart, boasts a national reputation, with alumni distributed worldwide. As noted in a recent national study, not only is the U.T. program one of the few logistics programs in the country which offers a Ph.D. degree, the program also offers more courses and delivers more degrees per year than many of the numerous other programs in the country.

The Transportation Executive-in-Residence Program, similar to a companion program in marketing, continues in its third year. Weekly, during spring quarter, the program hosts 10 guest lecturers for two-day visits each.

The Transportation Alumni Symposium, traditionally held in the fall, is an opportunity for students to meet and interact with graduates in the field. Fall 1986 will be the first year this symposium will occur concurrently with the Jim Bennett Jr. Memorial Lecture. As in the past, a distinguished Transportation Alumnus will deliver a keynote address of the symposium. Both events are organized and hosted by Delta Nu Alpha (DNA), the U.T. chapter of the International Transportation Fraternity. DNA continues to be involved in public service projects such as a current effort with A.J. Metler Hauling and Rigging Inc., a program in which hay has been delivered throughout the summer to drought-stricken East Tennessee farmers.



Looking ahead, the transportation program plans to continue the six-year-old summer European study tour, which examines international European business activities through visits and discussions with executives involved in finance, banking, retail, international trade and transport, manufacturing, and the several subsidiary functions which underpin exporting and importing. Participants may obtain six quarter hours of credit after completing a term paper highlighting some facet of the European trip experience.

The Marketing Executive-in-Residence Program will also continue in its ninth consecutive year. Both graduate and undergraduate students are provided a unique opportunity to interact with this group of executives from major U.S. corporations and to benefit from the "real-world" situations they present.

STATISTICS AND MANAGEMENT SCIENCE

David L. Sylwester, Chairman

The Statistics Department and the Management Science Program support two areas of study in the College of Business which at many universities are housed as mathematics disciplines in the College of Liberal Arts. Statistics has experienced swelling ranks in recent years, and, due to many current events, the department projects added growth and prestige in the future.

Through a framework of three degree programs the statistics faculty teaches and advises a total of 50 undergraduate, 15 graduate (M.S.), and 15 participants in the Intercollegiate Graduate Statistics Program. These numbers reflect a 200 percent increase in the number of majors enrolled in the program three years ago. To meet the needs of the larger student population, the number of statistics faculty has recently been increased to 14. In light of this growth and the increasing demand for superior statistical training in many diverse industries, groundwork is being laid for establishing a doctoral program in statistics.

Far-reaching in its influence and application, the Intercollegiate Graduate Statistics Program, established in 1983, enables students to earn a major or minor in statistics as part of their graduate degree program in other departments and colleges at the University. This program can be pursued at the master's and doctoral levels and has designated curricula already established with the Colleges of Agriculture and Education as well as several departments in the College of Liberal Arts. Additionally, programs are under review and in the planning stages in the College of Communications and the School of Social Work. Graduates of this program are provided a competitive edge in employment because of their training in quantitative methodology in a spectrum of areas ranging from health-related fields and biosciences to industrial and sociological applications.

The diverse applications of statistical processes have also created a strong demand for continuing and progressive education in industry. These needs are anticipated and serviced through the College's Management Development Center, many of whose courses are staffed primarily by statistics faculty.

Support from industry and alumni for the program continues to be evidenced in the growing number of American firms contributing to the Statistics Excellence Fund. Relationships have been established with Kellogg, Spun Steel, Harris, Dyneer, and Federal Express. The ALCOA Foundation has also committed support in a three-year relationship to the research and teaching efforts related to industrial statistics.

The Management Science Program continues to emphasize work at the master's and doctoral levels to educate professionals in the application of quantitative techniques for the solution of complex problems. Concentrated study in a supporting area (such as another department of the College, computer science, public administration, etc.) is required to complement the development of sufficient mathematical maturity for creative problem solving.

In 1985, 12 full-time and six part-time students participating in the Management Science Program were supported by teaching assistantships, fellowships, and industry sponsors such as TVA and ORNL. Recent Ph.D. graduates are primarily employed at various universities like Carnegie-Mellon and Penn State and companies such as Federal Express and Southland, Inc.

CENTER FOR BUSINESS AND ECONOMIC RESEARCH

David A. Hake, Director

A large portion of the efforts of the Center for Business and Economic Research are directed toward longstanding relationships with several state agencies and are based on ongoing contracts renewed each year to service their various functions. The most prominent example, the annual **Economic Report to the Governor of the State of Tennessee on the State's Economic Outlook**, is published jointly with the Tennessee State Planning Office. In 1983 a supplement to ERG was initiated in the form of quarterly economic updates and planning forecast reviews. The basis for ERG and the quarterly forecasts is the Tennessee Econometric Model, a system of annual and quarterly models of the state economy which have been under development at CBER since 1973.

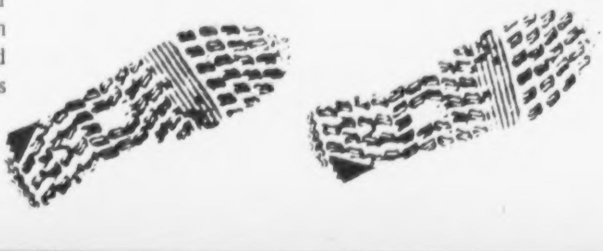
The Tennessee Economic Forecasting Service is available as a private-sector analog to ERG and its quarterly review process. TEFS, an information service which can be used to support both long-term and business-cycle-sensitive planning efforts, offers extensive annual and quarterly economic databanks, forecasting seminars, and economic and market-related interpretive and advisory services.

The Tennessee State Data Center, a joint project with the Tennessee State Planning Office, provides public- and private-sector access to economic and socioeconomic data not readily available in printed form, including computer-based detail from the U.S. Census Bureau, the Bureau of Economic Analysis, and the Bureau of Labor Statistics.

Another departmental undertaking that involves research, data, publication, and computer resources is the annual publication of the **Tennessee Statistical Abstract**, a 760-page standard reference for economic and social data in Tennessee. The **Abstract** is a collection of tables and figures that provide the most current historical information available for the state as a whole, for Tennessee's six Metropolitan Statistical Areas, each of the 95 counties, and cities and towns, as well as the 11 other southeastern states. A rankings supplement compares Tennessee to the nation and other southeastern states in areas such as business, government finances, transfer payments, education, and income. The **Abstract** is a visible example of the research information available from the Center.

In addition to ongoing projects, CBER has been awarded several contracts to be initiated in the upcoming fiscal year. A study of the births and deaths of firms began in September of 1986. The first part of the study is a joint endeavor by the Department of Employment Security and CBER. The second part is an extension of the project into an analysis of the role that the state has played in encouraging or discouraging births and deaths of firms and will be used to target the implicit and explicit policies that could stimulate more rapid economic growth.

As a follow-up and extension of an



CBER is actively continuing the technological changeover that has involved the purchase and installation of personal computers and related software.

earlier study for the Tennessee Department of Economic and Community Development, CBER has already begun data collection for a study of the business location determinants in Tennessee. The earlier study examined the reasons behind the Tennessee location or expansion of manufacturing firms from 1980 to 1983, a period that was substantially a recession. The 1986 study will isolate location decisions of new and expanding manufacturing and service firms choosing Tennessee locations in 1984-1985, a period of economic expansion.

On a college-wide basis, the Center is actively continuing the technological changeover within CBA that has involved the purchase and installation of word processors, microcomputers, and related software for faculty, staff, administration, and graduate students. Engineering the project has involved not only installation and maintenance, but staff from the Center have also been conducting classes in text processing and providing updated software to College personnel in an effort to maintain the most appropriate use of research and study aids.

MBA CENTER OF EXCELLENCE IN NEW VENTURE ANALYSIS AND ENTREPRENEURSHIP

Alex Miller, Director

The administration of Governor Lamar Alexander may best be remembered for his zeal for improved education in Tennessee and the resulting Better Schools Program. As an extension of this program into higher education, 16 Centers of Excellence now exist in Tennessee, five of which are affiliated with The University of Tennessee, Knoxville campus. Among them is the U.T. Center of Excellence in New Venture Analysis and Entrepreneurship.

What is new and noteworthy about the College's Center is its emphasis on servicing, through a graduate program, those businesses which are new ventures – defined as those independent small businesses which offer a product or service that is not "tried and true" and is definitely innovative.

As a part of the MBA program, the Center for Excellence functions not only to service the needs of new ventures but also to spark a spirit of creativity and innovative thinking in the MBA graduates. The Center will begin offering courses as an area of specialization in the MBA program in 1987 to prepare graduates for entrepreneurial and managerial roles in the initiation and growth of new ventures.

The program at Knoxville will be only one of a handful of graduate programs in the country with an emphasis on Entrepreneurship and New Venture Analysis. To staff these classes and others being developed in conjunction with the Management Development Center, faculty from several academic departments in the College will participate. Three unique courses have been designed to merge the basic disciplines with the expertise essential for successfully bringing innovative ideas to the marketplace.

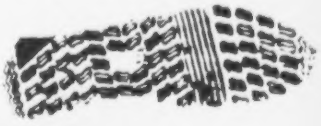
CONSTRUCTION RESOURCES ANALYSIS

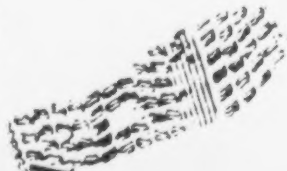
William R. Schriver, Research Director

Construction Resources Analysis (CRA), a research organization affiliated with the College of Business Administration, serves the construction industry and related industries with a research approach that combines practical knowledge of the construction process with a multidisciplinary methodology of econometrics, statistics, engineering, and computer science.

CRA is currently involved in several projects which are representative of the type of work CRA has traditionally done, and are also indicative of CRA's future course. For example, in the Davis-Bacon project, named for a federal statute enacted in 1931 to protect wage structure of local construction workers, CRA plays an ancillary role to the U.S. Department of Labor by conducting wage surveys throughout the U.S. and establishing a data bank for referencing federally funded construction projects.

CRA is also involved as a subcontractor to Oak Ridge National Laboratories and the U.S. Air Force in the analysis of the economic impact of the deployment of specific weapon systems.





Along these same lines of anticipating and forecasting construction costs for weapons and labor, CRA also explores on a long-term basis the construction costs of electrical power plants as a consultant to Edison Electric

Institute. From a data base this study forecasts the maintenance costs for operating existing facilities and provides customized studies for individual utilities.

Future plans for CRA include more subcontracting from federal agencies; however, the organization also anticipates being involved in various studies for private companies which entail forecasting growth in the construction industry by regions and thereby also projecting the demand for materials and labor. Impending studies may extend to involve professionals from the Colleges of Engineering and Architecture.

DEVELOPMENT

Vicki B. Fain, Director

Since 1982 the CBA Development Office has seen the initiation and function of numerous fund-raising projects. The Accounting Excellence Endowment Fund, with a $1.5 million goal, was recently completed with more than $1.7 million in gifts and pledges. The Transportation and Logistics Excellence Fund is close to reaching the $750,000 goal. Other efforts underway include the J. Fred Holly Endowment for Excellence in Economics, The W. Edwards Deming Chair in Statistics, the MBA Center of Excellence in New Venture Analysis and Entrepreneurship, and funding for two chairs of excellence. In all, these efforts have goals exceeding $4 million.

Although the College receives major annual gifts of $100,000 or more (many in the form of stock, land, and other appreciated assets), the basis for the private support in the College is the annual gifts from alumni, faculty, and other friends in the $5-$1,000 a-year range. In fact, three departments have annual giving fund appeals.

The emphasis on future fund-raising activities will depend on the priorities established by the Dean and the department heads. Efforts continue in three areas: high level support from alumni in the $10,000+ range, increased corporate support in cooperation with the Management Development Center, and estate planning and deferred giving to the College.

The state of Tennessee provides 37 percent of the operating budget for The University of Tennessee. While these funds are essential, the University must rely increasingly on other sources of revenue to enhance the quality of academic programs. Other sources of revenue include auxiliary enterprises, federal and private grants and contracts, tuition and fees, and private gifts. The purpose of the Development Office is to secure private support for the University.

Private support from alumni and other friends, corporations, and foundations provides for important projects that cannot be funded through state appropriations: undergraduate scholarships, graduate fellowships, chairs and professorships, faculty development grants, teaching and research awards, and funds for other special academic needs.

For the College of Business Administration, development efforts began in 1970 when the Partnership for Achievement Campaign was initiated. As the first campaign for major gifts at The University of Tennessee, the Partnership for Achievement effort obtained private gifts to fund a permanent endowment for the College of Business for scholarships, fellowships, and faculty support. More than $3 million was raised, and today the College boasts a $6 million endowment for all departments.

In order to maintain the momentum of that first campaign and the University-wide Tennessee Tomorrow Campaign from 1977-1980, the College determined the need for a concerted development effort specifically for all academic departments in the College of Business Administration. In cooperation with the University-wide and Knoxville campus development and alumni affairs offices, a development office was initiated.

Development is more than fundraising alone, since it includes working with a broad range of people: alumni, entrepreneurs, staff, faculty, administrators, students, volunteers, consultants, local, state and national officials, attorneys, and corporate and foundation executives. In many ways, development is, indeed, a partnership between the College and the donors.

The Development Office also serves as the arm for College of Business alumni relations, including working with departments in preparing newsletters. The first-ever College of Business Alumni Reunion scheduled this fall is coordinated through the Development Office. Other areas include public relations in preparing press releases, working with the Advisory Council to the Deans, and departmental advisory councils.

The Development Office helps to encourage a continuing relationship between potential donors, current contributors, and the College of Business Administration. However, there are people who, in their everyday work, help development efforts: the excellent

> The Development Office helps to encourage a continuing relationship between potential donors, current contributors, and the College of Business Administration.

Rebecca Kelly

The four-week Executive Development Program continues to be the College's flagship continuing management education program, tailored to the needs of upper-level managers who are being groomed for more general managerial responsibilities.

faculty member who makes a lasting impression on a student, a secretary who assists a student through registration, a special program on campus where visitors from off-campus are treated to a lecture. If a student, alumnus, or visitor feels good about the College or if a corporation benefits from outstanding College of Business graduates, the financial support will follow.

The Development Office tries to provide the opportunity for prospects to give. Proposals are presented personally to alumni and other friends seeking consideration of major gifts to support the College in its endeavor to continue a regional and national reputation for academic excellence.

MANAGEMENT DEVELOPMENT

John E. Riblett, Director

The training and development activities of U.T.'s Management Development Center (MDC) plays a key role in the development of human capital and assets in a growing number of American and international industries.

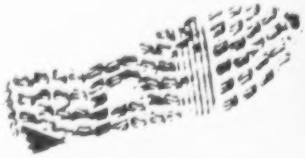
The Center's initial growth was based on the offering of many two- to three-day seminars on a variety of current business topics. In fact, three years ago, the shorter programs represented over 50 percent of the department's activities, but now the Center has consciously shifted its focus to longer, more developmentally oriented programs of one to four weeks in length. These programs have allowed the Center to form closer and more continuing relationships with the program participants and companies sponsoring them.

Over 2,000 managers and executives participated in the 70 programs offered by the Center during the past year. While the growth of the Center has been dramatic, it has been a planned and controlled growth. The emphasis has been, and will continue to be, on program quality. Consistently high quality programs with small class sizes, outstanding faculty, a highly participatory style of instruction, and an applied orientation have become the trademark of the College's Management Development Center.

The four-week Executive Development Program continues to be the College's flagship continuing management education program, tailored to the needs of upper-level managers who are being groomed for more general managerial responsibility. The one-week Executive Development Program for Distribution Managers is designed specifically for distribution/logistics managers who will be assuming broader, general management responsibilities. The two-week Management Development Program is designed for mid-level managers from any functional area who wish to broaden and upgrade their managerial skills, whereas the one-week Engineer/Scientist as a Manager Program is designed for technical specialists who are beginning to assume some managerial responsibilities.

The College of Business Administration has established a strong national and international reputation in the area of statistical management. All of the Institute for Productivity programs address the key world competitive issue of continuous improvement in the quality and productivity of work. There are a variety of statistical management programs for various levels of management and types of organizations. The one-week Senior Executive Institute for Productivity addresses productivity, quality, and statistical management issues from a broad, strategic viewpoint. The three-week Institute for Productivity Through Quality provides an exposure to the philosophy of statistical management and in-depth training in the application of the tools of statistical process control. The two-week Administrative and Service Institute for Productivity offers the opportunity to learn how to apply the proven statistical techniques to administrative processes in all types of organizations and to service industries such as banks and other financial organizations, hotels, hospitals, and retail outlets. The three-week Design of Experiments Program provides more advanced statistical training with computer applications.

There is every reason to believe that the Management Development Center will continue to prosper by meeting the education and development needs of America's private and public sectors.



GRADUATE PROGRAMS OFFICE

Roger Jenkins, Associate Dean

The quality of incoming MBA students has long been a plumb line for gauging the mettle of any MBA program. Five years ago entering MBA students averaged a GMAT score of 530 (60th percentile), with an average GPA of 3.1. The fall 1986 class averaged GMAT scores of 580 (82nd percentile) with an average GPA of 3.2, indicating a dramatic qualitative change. In a further effort to improve the quality of incoming MBA candidates, national recruiting efforts target individuals with nonbusiness degrees as well as people who have spent some time in the work force.

Significant curriculum changes also act as catalysts for improvement of the MBA program. The move to a semester system in the fall of 1988 will streamline the MBA curriculum to utilize faculty time efficiently and provide the optimum configuration of course material for students. The curriculum will also be enhanced by two new concentrations: Controllership and Entrepreneurship and New Venture Analysis.

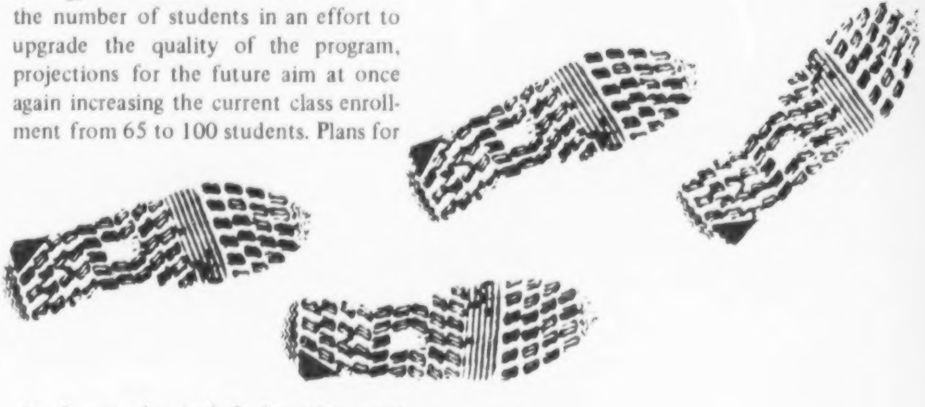
Another major change is the required summer internship for all MBA students, which provides opportunities to apply classroom knowledge to "real-world" situations. Each student is responsible for securing his own internship, although the Graduate Business Programs Office participates in the process by helping match the best student to the specific needs of a company with an interest in acquiring a summer intern.

The fall class of 1985 was the first to experience the new lock-step curriculum program which provides courses that are sequenced and offered only once a year, thereby maximizing the efficiency of scheduling faculty resources and assuring that prerequisites are satisfied.

Under this format the first year of study is devoted to core courses in the functional and supporting areas, among which are two new required courses: business communications and management information systems. The second year of study for full-time MBAs is devoted to concentration courses and the interactive business policy course.

A final all-encompassing change in the MBA curriculum is the emphasis on the use of microcomputers. In the fall of 1985 all incoming MBA students participated in mandatory workshops orienting them to the use of word processing and spreadsheet software, essential tools for all coursework in the following quarters of the program.

Although at one point it was the strategy of the Graduate Office to limit the number of students in an effort to upgrade the quality of the program, projections for the future aim at once again increasing the current class enrollment from 65 to 100 students. Plans for the future also include investing more effort in national recruitment of MBA candidates and continuing the annual symposium which in the past has brought renowned figures such as former President Gerald Ford and Ted Turner to the University campus. The MBA symposium guest for fall 1986 was T. Boone Pickens, President of Mesa Petroleum.



UNDERGRADUATE PROGRAMS OFFICE

Richard C. Reizenstein, Associate Dean

In a college with over 3,400 undergraduate majors, it might be easy to view an individual student as just another number, but to maintain the personal element, the College embarked in the fall of 1980 on a plan of administered enrollments, designed to assure that the number of students enrolled would not exceed the capacity of the College to provide a quality education. Admission to the Upper Division level is limited to those who have successfully completed the prescribed Lower Division courses who have shown seriousness of interest and purpose, and who have records of substantial academic achievement. The plan is administered through the Undergraduate Programs Office, which employs three full-time advisors to help the students with program planning, career decision making, and other problems of either a professional or academic nature.

General education, the business core, and area specialization is a trinity which supports the undergraduate business program. Building on a firm foundation in written and oral communications, mathematical and statistical

---

The new M.B.A. lock-step curriculum program' maximizes the efficiency of scheduling faculty resources and assures that prerequisites are satisfied.

Rebecca Kelly

The business core exposes students to the realms of financial and managerial accounting, micro- and macro-economics, and the functional fields of business.

methods, and an understanding of the methodology and accomplishments of the social, behavioral, and natural sciences, the business core exposes students to the realms of financial and managerial accounting, micro- and macro-economics, and the functional fields of business. Specialization comes through intensive study in one of more than 30 majors and/or concentrations, options, and tracks offered.

In addition to acting as student advocate, the Undergraduate Office also functions as a window to the outside in its promotion of graduates as well as its active recruitment of outstanding high school students. In fulfilling all these roles and meeting the many needs of undergraduate business majors, this office has undisputably made a qualitative difference in the product of its efforts, the students. The final product – the student who graduates with a degree in Business Administration – can expect to find opportunities with many different employers across the nation. Undergraduates from the College currently are employed with companies such as Procter and Gamble, General Motors, Frito Lay, PepsiCo, Texas Instruments, First Atlanta Corp., North Carolina National Bank, Armstrong World Industries, Arthur Andersen Ryder/PIE, Macy's, Tennessee Eastman, and numerous other major national firms.

ANNOUNCING THE FIRST CHAIR OF EXCELLENCE IN THE COLLEGE OF BUSINESS ADMINISTRATION

On September 26, Governor Lamar Alexander announced the receipt of a $250,000 outright gift from James A. and Natalie Haslam and the Pilot Oil Corporation of Knoxville. This gift will be combined with $250,000 in other private money from the College of Business Administration, and the $500,000 total will be matched by the State of Tennessee under the Chairs of Excellence Program. The cumulative sum will provide a Chair of Excellence in Management in the College of Business Administration.

Pilot Oil Corporation, a multi-million dollar company with 110 facilities in sixteen states, began 28 years ago as a one-pump gas station in Gate City, Virginia. James A. Haslam II, founder and President of Pilot Oil Corporation, is an alumnus of the College of Business Administration, class of 1952, and former captain of the Volunteer football team. He has served on the Board of Trustees since 1980 and over the years has played an important leadership role in more than a dozen university organizations. Mrs. Haslam, a 1952 UTK graduate in liberal arts, is also active in the community and the University.

Private giving of the sort exemplified by the Haslams and Pilot Oil often provides the margin of excellence sought by the College. Such gifts allow us to attract outstanding students and those with financial needs to our undergraduate and graduate programs, to attract and keep outstanding faculty members, and to permit renewal of the intellectual capital of our faculty through research, development, and other grants.

For further information on how you might contribute to continuing the College of Business Administration's quest for excellence, call or write to Ms. Vicki Fain, Director of Development, 721 Stokely Management Center, Knoxville, TN 37996-0570, (615) 974-6083.

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Winter 1987

Survey
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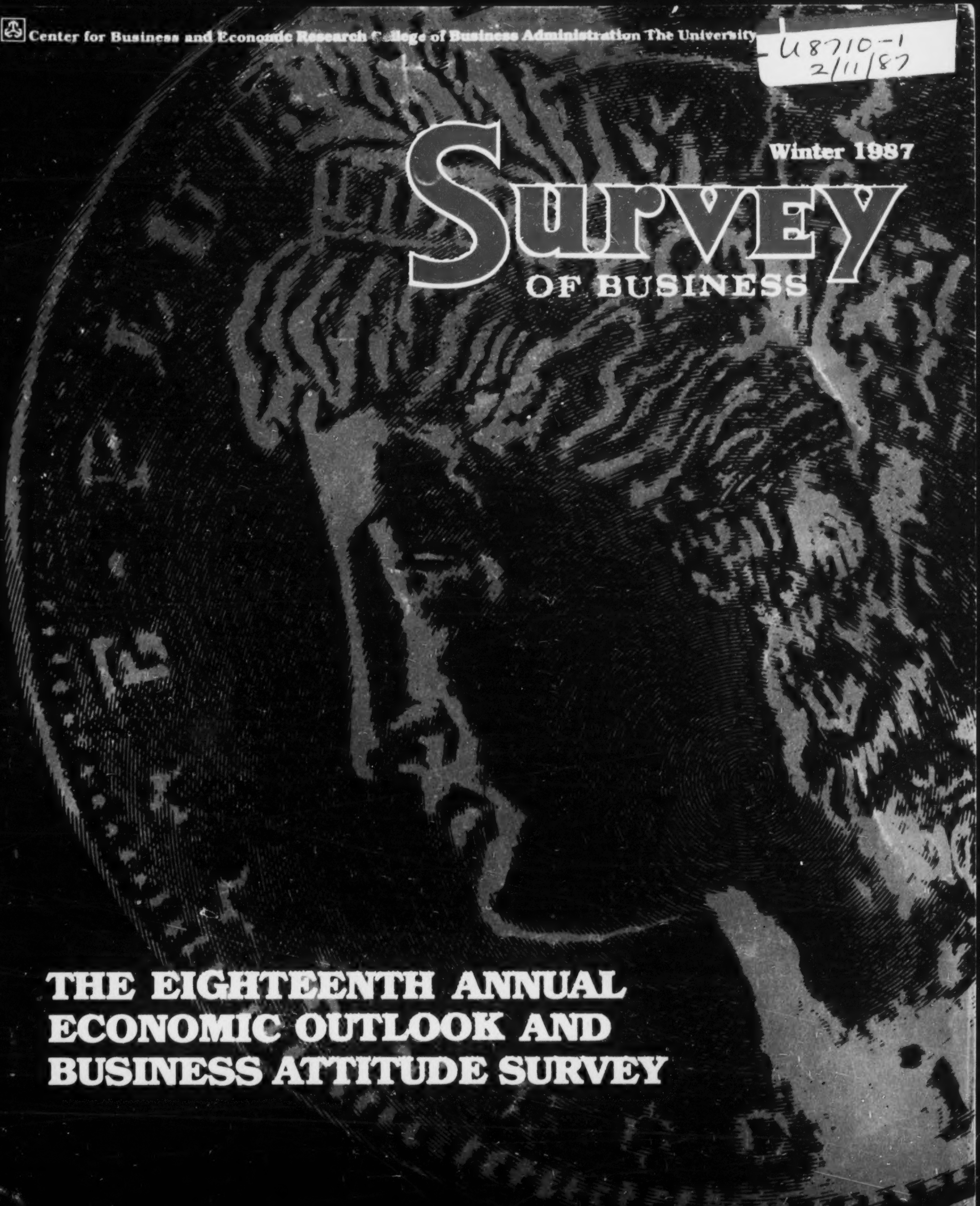

THE EIGHTEENTH ANNUAL ECONOMIC OUTLOOK AND BUSINESS ATTITUDE SURVEY

WELCOME to the annual OUTLOOK edition of the **Survey of Business**. The 1987 Outlook Panel, below, is the eighteenth in the CBER history of asking leading executives from business, education, government and industry to share their views on issues that can affect the lives of all Tennesseans. In the **1987 Survey of Business Attitudes** article that follows, we include the results of our survey. Besides discussing the U.S. and Tennessee economies, the Panelists examine various issues, including Federal Tax Reform, basic labor force skills, and software quality.

In the second article, John W. Mayo examines the national economic forecast, which includes an agricultural Outlook by Irving Dubov. The third article, by CBER economist colleagues William F. Fox, David M. Mandy and Matthew N. Murray, presents the CBER forecast for the Tennessee economy. The latter two articles have been adapted from the 1987 **Economic Report to the Governor of the State of Tennessee on the State's Economic Outlook.**

David A. Hake, Editor and Director, CBER

Panelists for the 1987 Survey of Business Attitudes

• **Norbert J. Ackermann, Jr.**, President, CONINCO, Inc., Knoxville
W. G. Adams, Vice President, Tennessee Eastman Co., Kingsport
Herbert G. Adcox, President, Herb Adcox Chevrolet, Chattanooga
Richard N. Aft, Executive Director, United Way of Greater Memphis, Memphis
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Albert M. Austin, Executive Vice President, Boyle Investment Co., Memphis
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† **Alf T. Barnette**, Executive Vice President, West Tennessee Industrial Association, Jackson
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† **John D. Canale**, President, D. Canale & Co., Memphis
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† **W. Lewis Wood, Jr.**, Senior Vice President, Allen & Hoshall, Inc., Memphis
• **Allen Zang**, President, Nashville Bridge Co., Nashville

★ These panelists have served 15 or more years.
† These panelists have served 10 or more years.
• These panelists have served 5 or more years.

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The University of Tennessee
Winter 1987
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SURVEY
OF BUSINESS

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THE AUTHORS

Betty B. Vickers, *a Research Associate at the Center for Business and Economic Research, College of Business Administration, The University of Tennessee, Knoxville, is Project Director of the State Data Center and editor of the* **Tennessee Statistical Abstract.**

David A. Hake *is Director of the Center for Business and Economic Research, College of Business Administration, The University of Tennessee, Knoxville.*

Jesse H. Poore, Jr. *has been Professor and Head, Computer Science Department, UTK, since July 1986, following a five-year appointment as Professor of Information and Computer Science and Assistant to the President for Information Technology at the Georgia Institute of Technology. In 1983 he was appointed Executive Director of the Committee on Science and Technology of the U.S. House of Representatives.*

John W. Mayo *has been a Research Assistant Professor, CBER, and Assistant Professor of Economics, UTK, since 1981. His areas of specialization are in industrial organization and applied microeconomics. He is co-project director on a major research project studying births and deaths of firms in Tennessee and across the nation.*

Irving Dubov *is Professor of Agriculture Economics and Rural Sociology, UTK. He has contributed the agriculture outlook to the Outlook* **Survey** *for the past eight years.*

William F. Fox *is Associate Director, CBER, and Associate Professor of Economics, CBA, UTK. In his role as Director of Research in CBER, Dr. Fox has just completed the* **1987 Economic Report to the Governor** *and is concluding an update of* **Business Location Determinants in Tennessee, 1980-1985,** *which examines the reasons business firms locate in Tennessee.*

David M. Mandy *is a Research Assistant Professor, CBER, and Assistant Professor of Economics, UTK. He has recently joined the staff after completing graduate studies at the University of Illinois, Champagne/Urbana. His fields of specialization are economic theory and econometrics.*

Matthew N. Murray *is a Research Assistant Professor, CBER, and Assistant Professor of Economics, UTK. His recent graduate studies at Syracuse University included two years in the Metropolitan Studies Program. He is interested in policy as it relates to public finance and health and labor economics.*

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THE ANNUAL SURVEY OF BUSINESS ATTITUDES

Outlook '87 Panel Examines The U.S. and Tennessee Economies

Betty B. Vickers
David A. Hake

Tennessee business executives from across the state who make up the 1987 Outlook Panel are concerned about the effects of Federal Tax Reform and changes in the political arena as they share their expectations for the Tennessee and U.S. economies in 1987. Responses to the Outlook '87 survey were received shortly after the passage of Federal Tax Reform and just prior to the November 4th election of Ned Ray McWherter as Tennessee's next governor. Concern of the business community for these issues demonstrates that, while each of these decisions is made by democratic process in search of the common good, change generates uncertainty.

Comments from these panelists capture the opinions expressed by many in their expectations for 1987:

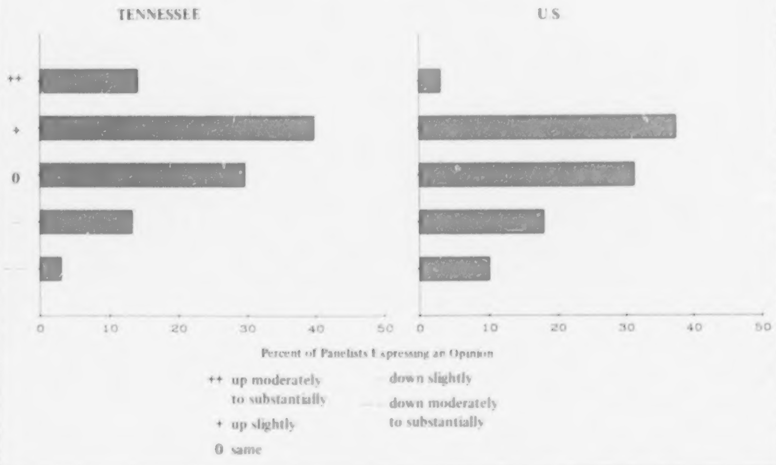
A new governor, new legislative leadership, tax reform, and other dynamics combine to set a cautious climate. **An East Tennessee Manufacturer**

Tennessee's position in the Southeast, relative to other states, has improved in the past few years, but we still have a long way to go compared to the coastal states. We can continue to improve with the proper political climate. **A Middle Tennessee Utility Executive**

The tax law will have a short-run downward effect, but I believe Congress will enact necessary changes. The long range will be good if we can stop deficit financing of national debt. **A West Tennessee Manufacturer**

Figure 1 shows panel expectations for both the state and national economies for 1987 relative to 1986. In the first part of this summary of 1987 Business Attitudes Tennessee executives share their own analyses of the immediate economic outlook for Tennessee and identify economic problem areas for the coming year. What, if any, effect the passage of Federal Tax Reform legislation had on their expectations for the Tennessee economy is also addressed. The second part contains panelists' views on the direct effect of Federal Tax Reform on businesses and individuals.

1. Panelists expect the Tennessee economy to be the same or slightly better in 1987 compared to 1986; expectations for the U.S. are only slightly lower.



Issues related to productivity in the state economy can be found in the third section. One relates to literacy and basic skills of the work force and another to the dimensions of the quality of computer software. Nearly 70 percent of Tennessee business executives expect the state economy to remain the same or to be up slightly in 1987 as compared to 1986. An additional 14 percent believe that the Tennessee economy will be up moderately to substantially. The remaining 16 percent, a minority, think the Tennessee economy will be down as compared to last year; and most of these executives expect the decrease to be slight.

When asked what effect Federal Tax Reform had on their outlook for the Tennessee economy in 1987, 48 percent of the panelists replied that Tax Reform had no effect, while 39 percent said that it had a negative effect on their perceptions, thus pushing their expectations downward. On the other hand, 13 percent said that the effect was positive or provided upward pressure to their expectations.

Panel expectations for the national economy are slightly lower than their outlook for the state. Even though approximately 69 percent think that the national economy will be about the same or up slightly in 1987, only 3 percent look for moderate to substantial improvements, and 28 percent expect the U.S. economy to be down relative to 1986. (Eighteen percent feel the decrease will be slight; but more than 10 percent think the nation will experience a moderate to substantial decrease.) The majority response in both cases was that the economy would be about the same to up slightly in 1987.

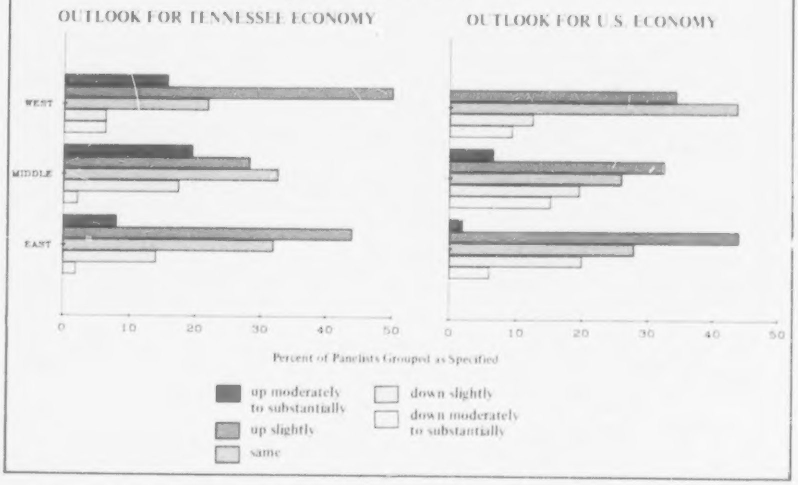
Outlook by Geographic Sector

Figure 2 shows expectations of each of the geographic regions for Tennessee and the U.S. economies. West Tennessee panelists lead the positive response on the state economic outlook. Sixty-six percent of these panelists think that 1987 will be up, and 16 percent think the increase will be moderate to substantial. Only 12 percent of the West Tennessee panelists perceive a decline in the state economy relative to last year. Respondents from Middle and East Tennessee are also optimistic about the state economy, with 48 and 52 percent, respectively, indicating that the economy should be up next year.

The effect of Federal Tax Reform on these panelists' views of the Tennessee economy was particularly interesting. Panelists from West Tennessee were the largest percentage to regard the effect of tax reform as producing downward pressure on their evaluations. The opinions of panelists from Middle and East Tennessee were more neutral.

A comparison of panel opinion for the U.S. for 1987 by geographic sector shows that executives from Middle Tennessee have the lowest expectations. Sixty-five percent believe that the U.S. will be the same or better in 1987, but 35 percent think that the national economy will be down relative to 1986. East Tennessee-based executives are the most optimistic as 46 percent foresee improvements in the national economy.

2. West Tennessee panelists are most optimistic about improvements in the Tennessee economy; panelists from East Tennessee have the highest expectations for the U.S. economy



Outlook by Industry Group

The observation of differences and similarities in the responses of the various business sectors provides for a better understanding of the panel view. Figure 3, Outlook by Industry Group, shows that Services-sector panelists are the most optimistic about the state economy. Sixty-six percent of these respondents believe the Tennessee economy will be up in 1987. Manufacturers, representing the largest business sector, are nearly as optimistic, with 53 percent looking for improvements in 1987. Trade-sector panelists are probably the most diverse in their perceptions, as evidenced by the bimodal response. Trade-sector panelists also reported perceptions of adverse pressure from tax reform more often than other business executives. For example, 48 percent said that tax reform exerted downward pressure on their outlook for the Tennessee economy, while only 24

DEMOGRAPHY OF THE

The 18th annual Economic Outlook Survey was mailed to Tennessee business leaders in October 1986. A total of 130 responses were received in time to be included in the data tabulation and analysis. Another 18 responses were received after tabulations were complete. Comments from all respondents (148) provided valuable information for the narrative portion of this article.

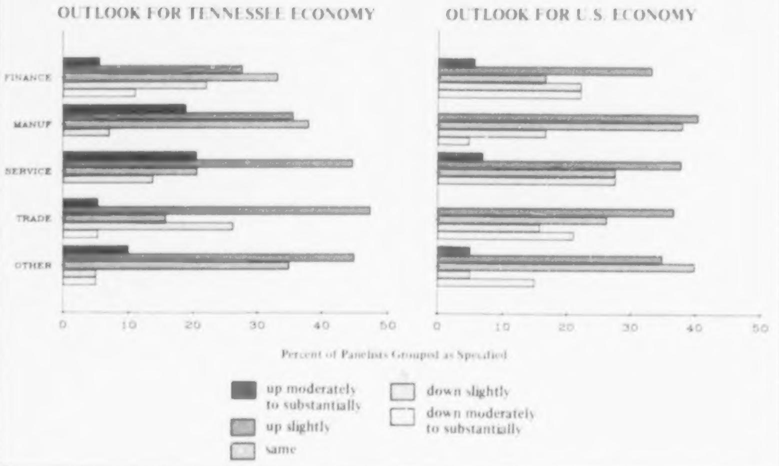
The tabulation of data by geographic location is based on responses of 32 business leaders from West Tennessee, 47 from Middle, and 51 from East. Chart A shows this geographic distribution of the Outlook Panel as well as the geographic distribution of the population and number of business establishments in Tennessee. The data sources for the latter are *Current Population Reports* and *County Business Patterns*, both published by the U.S. Department of Commerce, Bureau of the Census. The Outlook '87 Panel appears to be representative of the population and business concentration for each region of Tennessee.

Panelists are further identified by one of five industry-group designations. The Outlook '87 Panel is made up of 42 Manufacturers, 20 Trade sector panelists (including wholesale and retail), 18 Finance panelists (including banks, savings and loan associations, and insurance companies), 30 Services sector panelists, and a fifth category designated "Other" which includes 20 executives from construction, labor, education, and government.

Services sector executives were formerly included in the "Other" category; however, the growing importance of this industry group in the Tennessee economy provides the rationale for grouping the responses of these firms for data analysis. Business leaders included in the Services sector are from Chambers of Commerce; United Way agencies; management, engineering, and software consulting firms as well as accountants, architects, attorneys. This category also includes others classified as "Services" by the Standard Industrial Classification system.

Additional insight to the regional opinions is provided by Chart B, which depicts the business-sector composition of each geographic sector. West Tennessee, for example, has a heavier representation by manufacturers and service-sector panelists than the other regions. These two business sectors generated the most optimistic expectations for the state economy for 1987. Likewise, West Tennessee panelists were more optimistic than the other geographic regions. In other words, the West Tennessee opinions were dominated by the responses of Manufacturing-and Services-sector panelists.

3. Service sector panelists record the highest expectations for the state and national economies for 1987.



percent said there was no effect.

The most neutral response to the tax reform question came from the "Other" sector. Seventy-three percent of these panelists said tax reform did not affect their evaluations, and only 27 percent, the smallest response, said the effect was that of providing downward pressure on their perceptions.

The greatest diversity of opinion regarding the outlook for the U.S. economy is from the Finance sector. The response was bimodal, with 39 percent expecting increases in the national economy and 44 percent foreseeing a decrease for 1987 relative to 1986. The Services sector is the most optimistic for the U.S., as well as the state economy, with 45 percent anticipating increases at the national level for 1987.

KEY ECONOMIC ISSUES FOR 1987

The panel was also asked to review and evaluate 19 issues of potential economic concern in Tennessee, to record their expectations for each issue in 1987 relative to 1986, and then to rank the issues of greatest concern to them in 1987. These ranks were weighted and summed to arrive at a panel concensus on the key economic issues shown in Figure 4.

1. Level of Unemployment (score=198)*

***The "score" shown with each issue is the weighted response of all panelists considering the list of potential economic problems. It is included to indicate the relative importance of the issues.**

For the second consecutive year, Outlook panelists rank unemployment as the most critical economic issue. The state unemployment rate has continued to decline annually since 1982; however, it has been viewed as the key issue by three of the last four Outlook Panels. (Unemployment was second only to concerns regarding interest rates in 1985.) This is the top ranked issue for 1987 even though 49 percent of the Outlook panelists expect unemployment rates to continue to decline.

> *Tennessee continues to lag the U.S. economy in this vital indicator. If we are to fulfill our expectations as a dynamic center for economic activity, we must have a more robust* **employment** *picture to stimulate the economy.*
> **A Middle Tennessee Banker**

1987 OUTLOOK PANEL

Chart A: Regional distribution of Outlook '87 Panel as compared to total population and number of business establishments

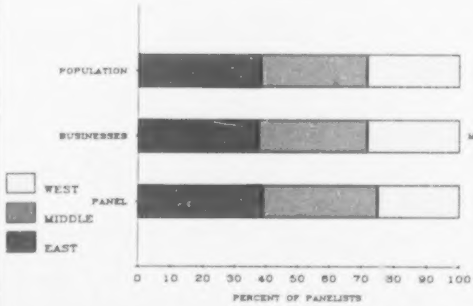
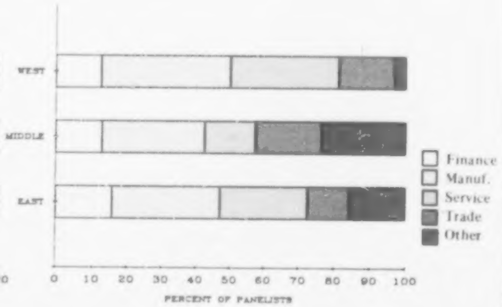


Chart B: Industry composition by geographic sector



A lower level of **unemployment** *would have a tremendous impact on state's economy.* **An Attorney from West Tennessee**

Important urban/rural differences in unemployment rates have been noted recently by the Tennessee Department of Employment Security in briefings which accompany the release of the monthly employment figures. Metropolitan area counties have experienced relatively low rates of unemployment, while rural counties continue to have high rates of unemployment. Concern of the Outlook Panel for this issue is due in part to the duality of this factor.

The state average does not tell the real story. Unemployment is very high in many counties. The state of Tennessee must develop more ways to help hometown business expand, and small business to develop. **A Middle Tennessee Retail Trade Executive**

There are areas of high unemployment in our state (our area included), and until we can cure these situations, we cannot have the quality of life our citizens need and deserve. **A Banker from East Tennessee**

2. Total Business Costs Increasing Faster Than Revenues (158)*

Ranked first or second by 25 percent of the panelists for 1987, this factor has increased in importance over the past three years. Business costs were considered fourth among critical problems by 1986 Outlook panelists and sixth the year before. Clearly, business executives feel that costs will increase more than revenue this year as compared to 1986. These perceptions are shared by 68 percent of the total panel. Trade-sector panelists have the highest consensus, as 90 percent believe that costs will increase more than revenues in 1987. The importance of this factor, relative to other potential economic problems, is shared by panelists from each geographic region of the state.

Tennessee does not have any overwhelming critical problems. I selected increasing costs because of rapidly increasing costs of insurance, utilities, etc., that cannot easily be passed on in pricing. **A Manufacturer from Middle Tennessee**

The type of costs that are increasing dramatically today are the overhead type, such as insurance, accounting and legal fees, and other service charges. These are hard to define and quite often underestimated in the pricing of our products. **A West Tennessee Construction Industry Executive**

Increasing costs will tend to squeeze an organization's liquidity and its ability to internally finance future needs. **A Manufacturer from East Tennessee**

3. Scarcity of Skilled Workers (144)*

Unemployment and the shortage of skilled labor are two economic problems that are often considered simultaneously in Tennessee. The current emphasis on education is directed, in part, to the alleviation of these problems. Considered the top two economic problems by the Outlook Panel last year, unemployment and the shortage of skilled labor are ranked first and third by the Outlook '87 Panel. Business leaders provide the following reasons:

Unemployment represents economic displacement or adjustments in available jobs/employees. We need to provide a better match between available jobs and employee qualifications. Education is the key element to a successful economy. **A Services Sector Panelist from East Tennessee**

Especially in the rural areas of Tennessee, our labor force is largely unskilled due to the nature and type of industry our state has attracted in the past. We are in a transition stage as a state, and we must retrain our existing labor force to meet the employment needs of the newer industries Tennessee is now attracting. **A Middle Tennessee Banker**

Correcting the problems presented by an unskilled work force cannot be accomplished overnight; but business leaders believe the issue deserves immediate and ongoing attention for the benefit of all Tennesseans.

Tennessee has enough labor but not enough skilled labor, particularly in West Tennessee. Time is needed and attitudes must be changed. The problem is bigger than a one-year or even five-year resolution. Serious training and retraining must take place to take advantage of coming opportunities. **A Business Leader from West Tennessee**

Continuation of a favorable tax structure along with the state's pro-business climate will attract more new businesses. A shortage of trained high-tech workers could be a slight weakness to an otherwise strong economic building base. **An East Tennessee Manufacturer**

Although the issues ranked 4 through 8 were not ranked as often as critical problem areas, they still represent areas of considerable concern to the panel. Comments summarize the particular concerns expressed for each of these issues.

4. Underutilization of Plant Capacity (115)*

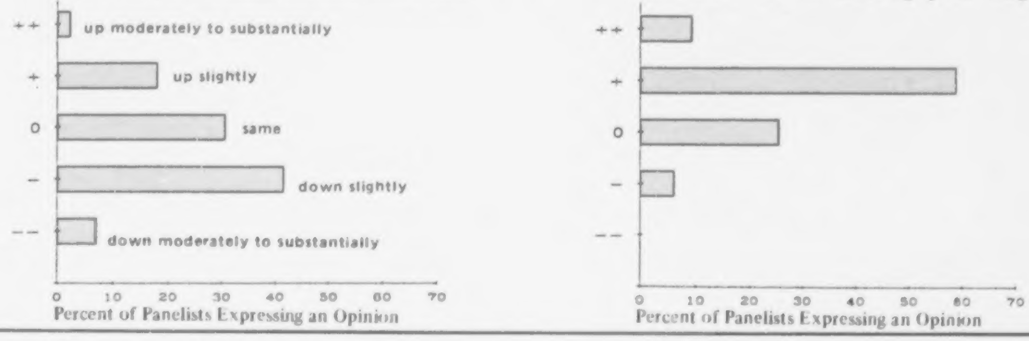
Unemployment is the key symptom. In order to correct the symptom, we must address many other facets of the economy. Most industrial facilities, especially those underutilized, are in need of state-of-the-art retooling for computer-aided manufacturing (CAM). Those shops not up-to-date will lose out gradually. Industry and business must take a fresh look at operations and update in order to compete. **A Manufacturer from West Tennessee**

There is a strong relationship between **underutilization of plant capacity** *and unemployment in Tennessee. We need to continue to diversify our economic base and to become less dependent on cyclical manufacturing industries. We still have to create more jobs to reduce unemployment. One solution is to put more effort into recruiting new companies in the Services area.* **An East Tennessee Insurance Executive**

4 Critical economic concerns in Tennessee: ranking and expected performance in 1987 compared to 1986

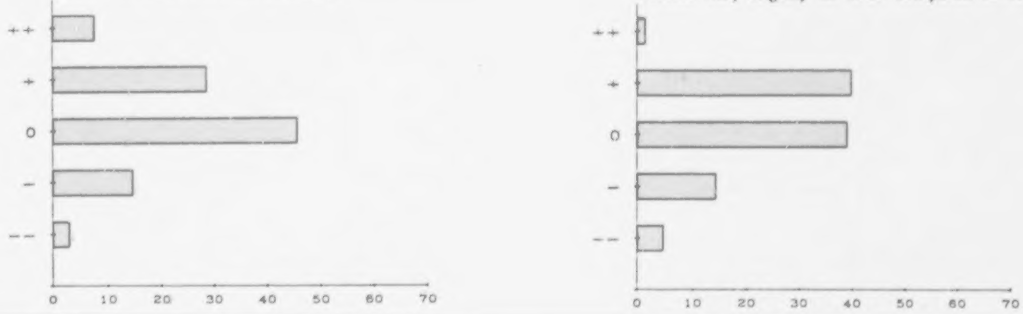
1. Continued declines in unemployment rates are expected; yet it remains the most critical issue.

2. Costs are expected to rise faster than revenues; thus there will be narrowing profit margins.



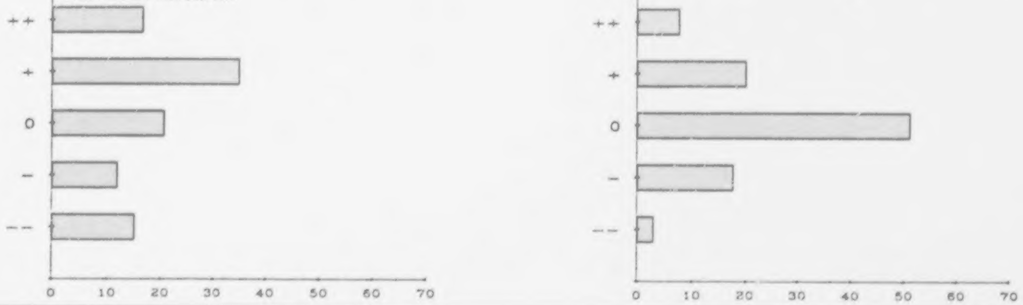
3. The scarcity of skilled workers remains critical even with slight increases in supply.

4. Utilization of plant capacity is expected to increase only slightly in 1987 compared to 1986.



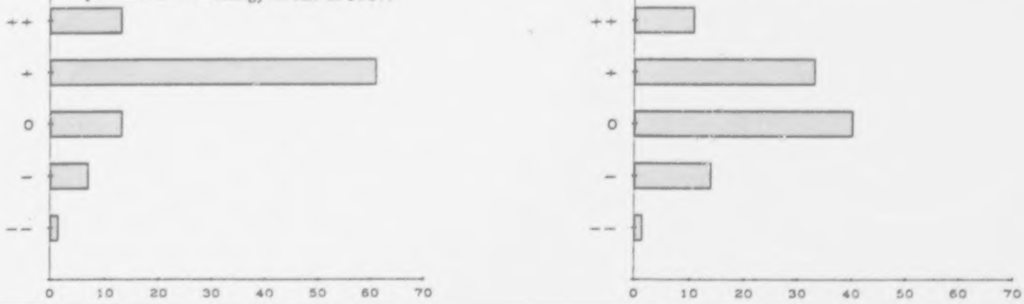
5. Supply of capital investment funds will be up slightly. Panelists are concerned that the increase will not be sufficient.

6. Panelists expect stability in labor-management cooperation.



7. Energy rates and TVA are viewed as important concerns by Tennessee executives. They clearly expect the cost of energy to rise in 1987.

8. Demands for wage rate increases are expected to be the same or up slightly in 1987.



Underutilized plant capacity is capital investment which is not productive. This is a sign that we are not able to compete in a global economy as well as we should. Since our wages will always be higher in the U.S., the only solution is to continue the drive for better products and greater manufacturing efficiency. **An East Tennessee Public Utility Executive**

5. **Supply of Capital Investment Funds (106)***

I see the need for more communities and our state to become aggressively involved in seeking venture capital as well as developing creative financing programs. Competition warrants these methods. **A Business Leader from West Tennessee**

We have relied very heavily on industrial revenue bonds in Tennessee. The shrinkage of these funds, plus the change in investment tax credits, will create a real problem for growth. Any marginal project will not be built due to lack of low-cost funds. **An East Tennessee Retail Trade Executive**

Tax law change reduces incentives for investors. They will be much more short-term return oriented. **A Consultant from East Tennessee**

6. **Labor-Management Cooperation (75)***

A good labor-management environment is the single most critical element in attracting new business and expanding existing businesses. If we have a good environment (labor-management), and maintain our right to work laws, this is a "real plus." The Saturn situation is very critical to the long-term labor management environment. It (Saturn) could be a negative if it does not contribute to a good labor-management situation. **A Manufacturer from Middle Tennessee**

7. **Cost of Energy (75)***

The costly situation with the TVA nuclear problems has the definite potential of being a substantial and long-term albatross to the economic well-being of the state and region. **A Manufacturer from East Tennessee**

8. **Demands for Wage Rate Increases (72*)**

Companies such as ours depend on a relatively inexpensive work force to compete with foreign-produced products. As higher wage employers such as GM and Nissan move into our area, pressure is put on companies already here to raise wages to compete for the best employees. I can't think of an easy solution but our lawmakers and leaders must keep existing industry in mind as they make their decisions, lest some of those industries are forced to leave. **A Middle Tennessee Manufacturer**

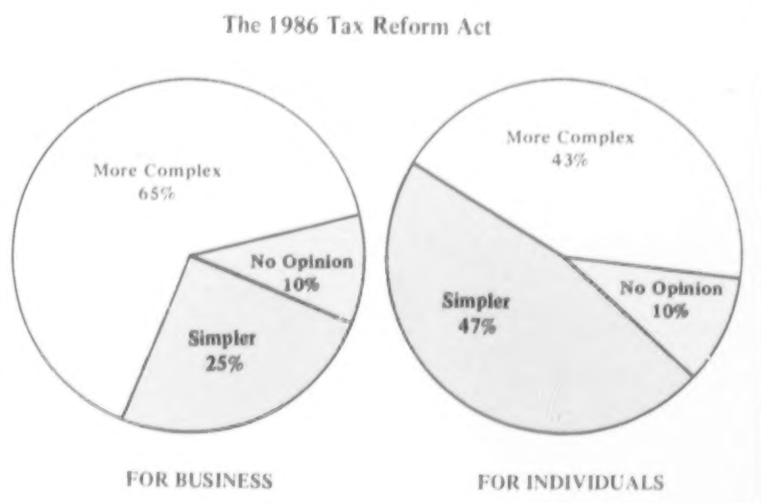
The remaining 11 issues were regarded as less important by the Outlook '87 Panel. Average scores for these issues ranged from 69 for "inadequate consumer demand" to 4 for "availability of energy."

Outlook '87 Panel Examines Federal Tax Reform

Congress passed a sweeping Tax Reform Act in September 1986. Outlook '87 Panel members were asked their views of some of the effects of this legislation. The following brief background was provided.

The bill is designed to shift a larger part of the initial tax burden away from individuals and to business firms. After a transition period, major provisions affecting individual taxpayers include the highest marginal tax rate being reduced to 28 percent, the personal exemption increased to $2,000, Individual Retirement Accounts eliminated for most middle- and upper-income taxpayers, the standard deduction increased, the highest long-term capital gains tax rate being raised from 20 to 28 percent, and the sales tax reduction being eliminated. Benefits of these revisions for a particular taxpayer

5. Panel attitudes on the goal of tax code simplification



depend on income and tax filing characteristics, but most taxpayers will see a decline in their tax liability.

Major changes in corporate tax laws include a reduction in the maximum corporate tax rate, repeal of the investment tax credit, and lengthening of the depreciation life for assets. The net effect of broadening the tax base and lowering income tax rates will increase tax payments made by corporations. This transition will be phased in by gradual implementation of the removal of these deductions and top credits.

Tax Simplification

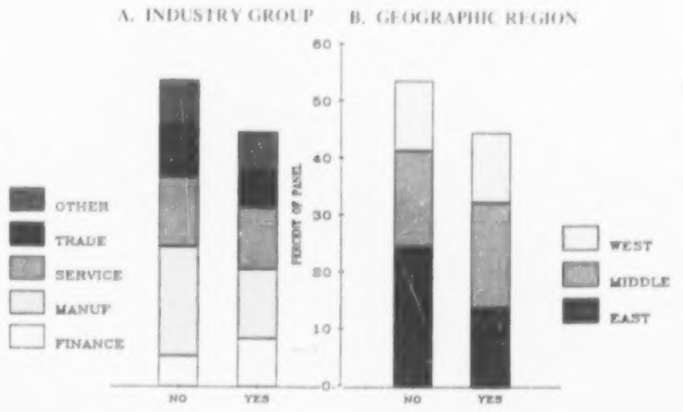
One of the major goals of tax reform was to simplify the tax code. Panel perceptions of the extent to which simplification was achieved for businesses and for individuals are shown in Figure 5. Sixty-five percent of the panel indicates that the '86 Tax Act will increase complexity for business. This compares with 25 percent of the executives who think business taxes will be simpler. Other than the 10 percent having no opinion either way, panelists are split as to whether individual taxes will be simplified (47 percent) or made more complex (43 percent).

Sales Tax versus Income Tax

Repeal of the sales tax deduction has the largest effect in states which rely heavily on the sales tax. Washington and Tennessee derive a larger proportion of their tax revenue from sales tax than any of the other states. Approximately one in four Tennesseans itemize on their tax returns. The panelists were asked if they believed that elimination of the sales tax deduction would increase the acceptability in Tennessee of replacing some of the sales tax with a personal income tax. Their responses by industry group and geographic region are shown in panels A and B of Figure 6.

Overall, almost 55 percent of the panel thinks that acceptability of the personal income tax will not be increased by elimination of the sales tax deduction. Viewing the industry distribution of opinion, it is clear that the Services, Trade, and "Other" groups of panelists are about evenly split on this issue. Even though a majority of Finance industry executives on the panel believe that acceptability of the pesonal income tax will be increased, nearly two-thirds of the larger Manufacturing group express the opinion that acceptability of the personal income tax replacing some sales tax will not be increased. Regionally, attitudes of panelists from West and Middle Tennessee are fairly evenly divided, with East Tennessee executives strongly influencing the overall outcome.

6. Will elimination of the sales tax deduction increase acceptability of replacing some of sales tax with personal income tax?



Another goal of tax reform was that lower tax rates would enable individuals to retain a larger percentage of earnings from additional work. Outlook Panelists were asked what effect this would have on people's incentives for additional work. **Forty percent** thought this would **"increase people's incentives"** for additional work but nearly **60 percent** felt this would have **"no effect on incentives."** There were no significant attitudinal differences on this issue across industry or regional subgroups.

Tax Independent Investment

Outlook executives were asked to indicate whether they agreed or disagreed with the following statement.

"Because of the new tax laws, people will have a greater tendency to invest their savings independent of tax considerations."

Close to 60 percent of the panel agreed with this statement. See Figure 7. Thirty percent disagreed and about 12 percent of the Panel was undecided. Panel A of Figure 3 also shows that there is no particular regional domination in the pattern of response. Panel B shows a cross-tabulation of the same response on tax-independent investment decisions, with the previous response on lower taxes as an additional work incentive. Over 80 percent of the panelists who indicated that the new tax laws would increase incentives for additional work also felt the laws would stimulate tax-independent investment decisions. While this is not too surprising, the solid color segments in Panel B emphasize that while 60 percent of the panelists feel that the new tax laws provide no incentive for additional work, more than half of them do feel that the new laws will stimulate tax-independent investment decision-making.

The following quotes are sampled from panelists who **agreed** with the statement that new tax laws will stimulate tax-independent investments:

Investments will be based on business reasons rather than tax reasons and this is good. I'm glad to see at least *some loopholes gone. I just wish we could get rid of all of them. Too much productive time is spent doing nonproductive things such as trying to figure out how to beat the system or take advantage of loopholes on government subsidies.*

Investment must now be based on return, not on tax offset. Most "tax-shelters" were marginal without tax savings.

The removal of the tax deduction for IRAs by higher income individuals and the removal of the long-term capital gain distinction eliminate the two major tax considerations in most investments currently made.

"Tax shelters" as used in the past are almost eliminated; therefore, investments must meet their own "economic tests."

The following quotes are from panelists who **disagreed** with the above statement:

1. The bill as passed contained hundreds of special exceptions (perhaps thousands). 2. Human nature will cause us to take advantage of "cracks in the bill." 3. Special interest groups will have it amended within three years.

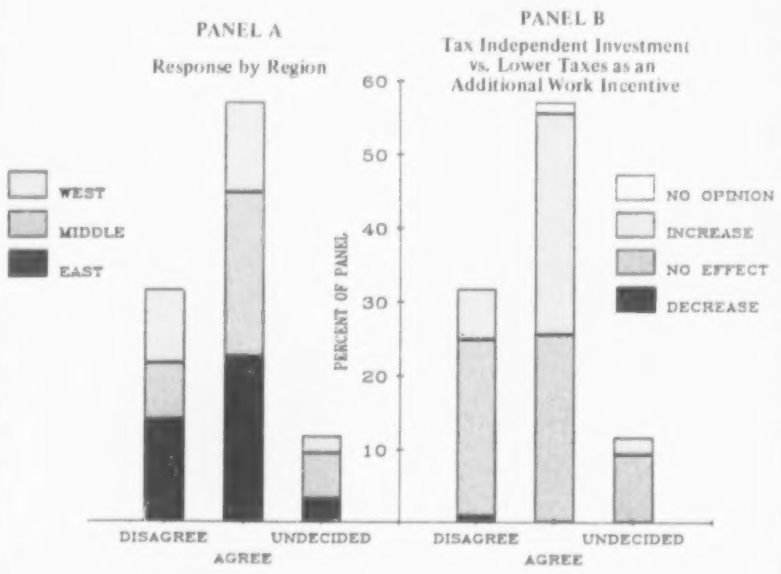
Because of the "phase-in" format with the Tax Reform Act, I think people will not change their savings plan quickly.

Typical comments from panelists who were undecided on the tax-independent investment question were as follows:

The question is too complex. IRA savings will decrease, but now, IRA savings will not be impartial. Tax savings will be spent.

It will depend on perception of spendable income after the new tax laws have had a chance to work and how smart people are with respect to long-range financial planning. Will they be willing to save with after-tax dollars?

7. Tax laws will stimulate tax independent investments



Outlook '87 Panel Examines Basic Labor Force Skills

Outlook Panelists have identified "scarcity of skilled workers" as one of the top five economic problems facing Tennessee every year in this decade. Outlook '87 Panelists rank it as the third most critical issue. It is argued that basic reading, writing, and quantitative skills are critical ingredients to improved productivity and a stable, dependable work force. The **1986 Report of the Commission on the Future of the South**, published by the Southern Growth Policies Board, listed "provide a nationally competitive education" and "eliminate adult functional illiteracy" as the top two goals for the South by 1992. Excerpts from the fall 1986 Report:

"Southern states were the first to respond to the clarion call of **A Nation At Risk**, *the 1983 Report of the U.S. Commission on Excellence in Education. Indeed, some states anticipated its findings and began improving their public schools well before the national outcry for better public education hit the press. Southern governors and legislators have remained in the forefront of the reforms throughout, setting the pace for the rest of the nation in terms of educational innovations and new investments."*

"The South may have set the pace, but it also started further back than the rest of the nation. We still spend 20 percent less per student than the national average, and only 68 percent of our ninth graders graduate from high school."

"The level of functional illiteracy in America is a disgrace. The South has an even higher proportion of adults who lack the basic skills to participate fully in the modern world. The loss of human resources is the consequence of schools that have not always served all people equally, as well as economic systems built on low-wage, low-skilled employment. One in four southern adults never went beyond the eighth grade; for Black adults, the figure is

three out of every eight. These Southerners have learned personally what society learns in general – that education is never as expensive as ignorance."

"Not only does ignorance drain individual success, it also drains the public purse. Functional illiterates earn 44 percent less than those with a high school diploma, are more likely to resort to crime, and are highly dependent on welfare. Reaching apprehensive, perhaps anxious adults is not easy . . . governments spend less than $100 per adult compared to $3,000 annually for each school child. Although devoted volunteers donate long hours, they reach barely 3 percent of those who need help."

Outlook Panel perceptions of the fundamental skills of current job applicants and also of employees are shown in Figure 8. Quantitative skills assessments of applicants and employees are shown in Panels A and C, respectively. Reading, writing, and verbal skills are in Panels B and D. Panel executives were asked whether current job applicants' and current employees' fundamental quantitative and nonquantitative skills were deficient, adequate, or very good.

In general, skills of job applicants were rated much lower than those of employees. This is as one might expect. Figure 8, Panels A and B, show that 50 percent of the panelists feel applicants are deficient in both quantitative and nonquantitative skills. Though more panelists rate applicants' reading, writing, and verbal skills slightly below their quantitative skills, the difference is not significant. Considering the response of panelists by geographic region, those from East Tennessee are less pleased with the skill level of applicants for their jobs than panelists from Middle or West Tennessee. Among the three regions, Middle Tennessee executives are relatively more pleased with applicants' skill levels. Panels C and D of Figure 8 show that quantitative skills of employees are rated slightly higher than their nonquantitative skills. Panelists' responses are fairly equally distributed across geographic regions of the state.

8. Fundamental skills of current applicants and employees by geographic sector

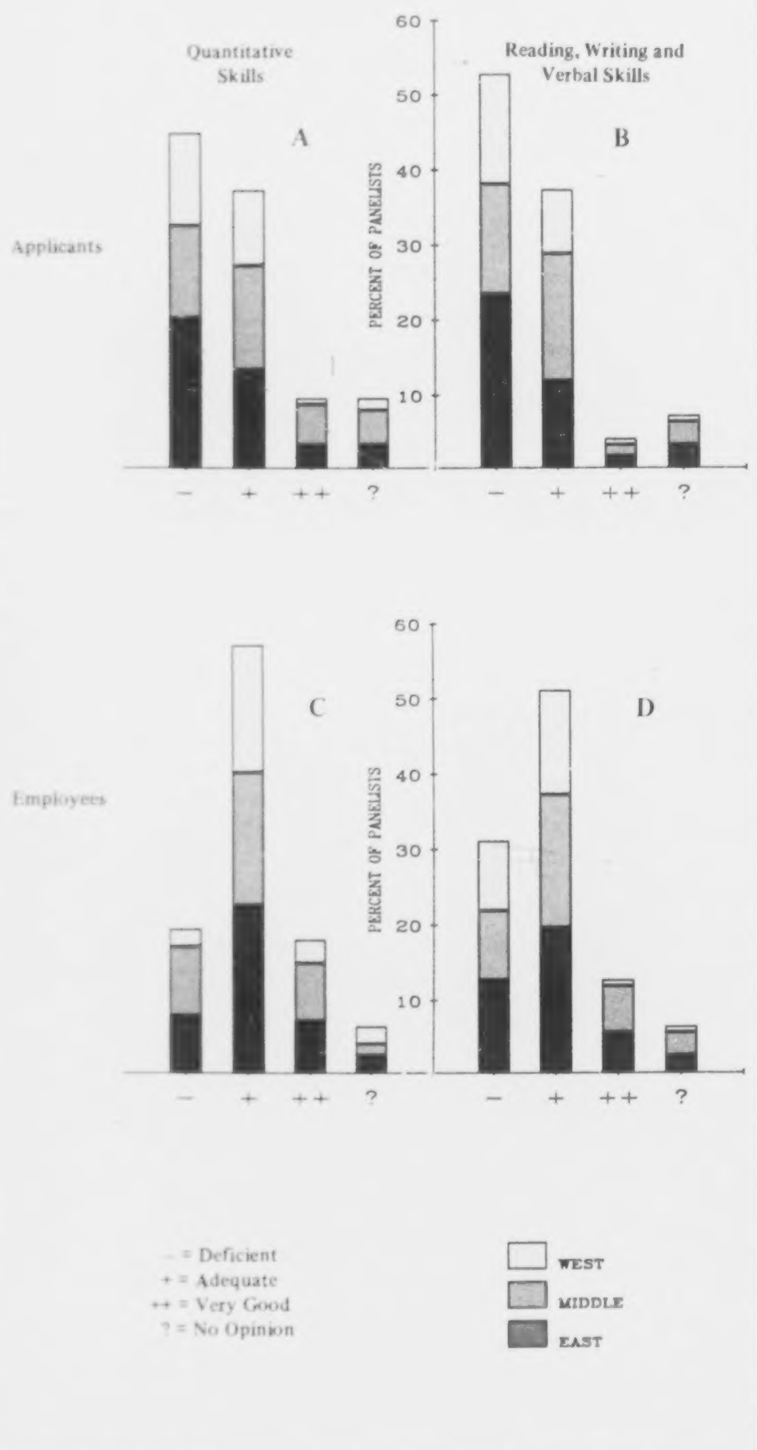


Figure 9 shows responses to the same questions as in Figure 8, but arranged by industry group.

In the last question in this section, panelists were asked if the skills of applicants for jobs have improved, not changed, or deteriorated over the last decade. Admittedly, that was a difficult question to answer, and panel response was bimodal:

"skills of applicants have improved over the decade." . . . . 41 percent

"skills of applicants have not changed." . . . . 18 percent

"skills of applicants have deteriorated over the decade." . . . . 33 percent

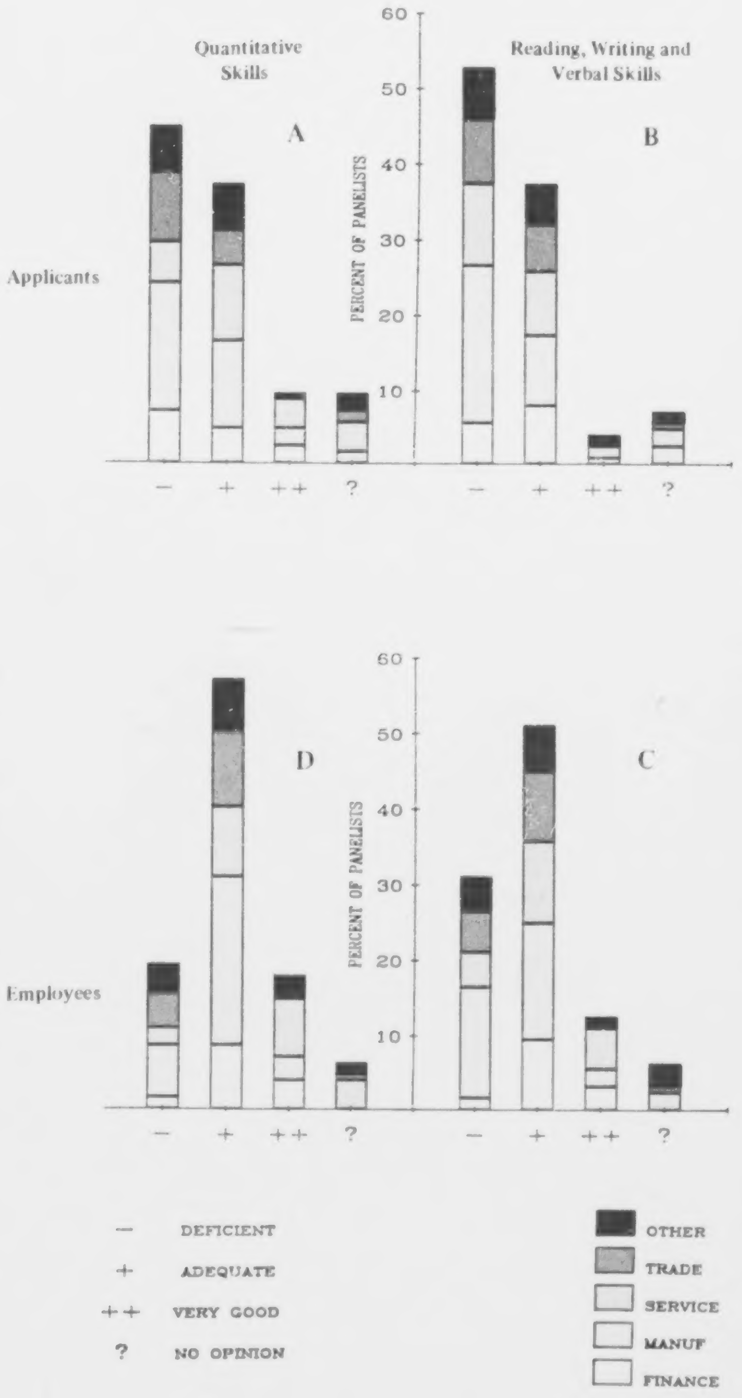
"no opinion one way or the other." . . . . 8 percent

While there was no consensus among the Outlook '87 Panel, the bimodal views were remarkably evenly distributed across geographic regions and all five industry groups.

In the absence of precise definitions, norms or stated goals, it is not possible to draw firm conclusions from this section. Instead, these results are left to individual interpretation. Perhaps basic skill deficiencies of 20 to 30 percent of employees, and 45 to 50 percent of current applicants can be tolerated in the Tennessee labor force — and perhaps not. **The Report of The Commission on the Future of the South** concludes:

> *"[The South has] proportionately more school-age children and proportionately less public money to spend. The South must be careful and innovative as it invests in instruction in the basic three Rs, but that investment should be in the more complex Rs which the next century requires: reasoning, research, and rhetoric. . . . Continuing investment in public schools can make southern students nationally competitive as thinkers and doers in the next century's workplace, one which will be as intricate as a microchip and as far-reaching as the globe."*

9. Fundamental skills of current applicants and employees by industry group



Outlook '87 Panel Examines Software Quality Issues

Jesse H. Poore

Issues related to software quality, though always important, have become even more significant in recent years. Software quality and the tendency for software projects to be behind schedule and over budget have long been the bane of an otherwise spectacular industry. As microprocessor chips and the software that makes them function become integral to more and more products, even consumer products, the issue of software quality begins to take on broader significance.

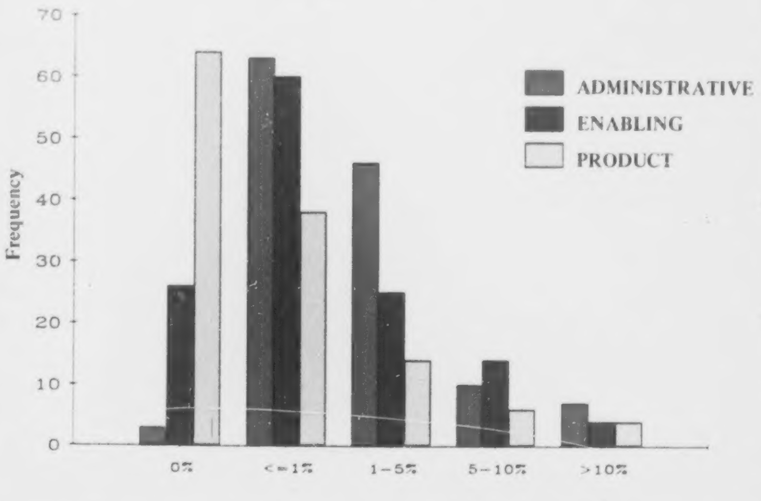
Questions on software quality were included in the Outlook '87 questionnaire to probe the level of consciousness of the respondents to the issues of software quality. The brief paragraph of introduction included in the questionnaire was designed to direct Outlook Panelists' considerations to the concept of software quality without influencing their answers by overly generous discussion.

Overall, the outcome was good. Based upon the comments, it appears that approximately 75 percent of the panel members were familiar with the inherent complexities of software. Most were also aware that this issue is independent of whether the software is developed in-house or is obtained externally, and that vulnerability to low quality software is not changed by its source.

One dimension of software quality is reliability, i.e., the time between errors, the probability of the program exhibiting an error, or the number of errors remaining in the code.

Another dimension is maintainability. Some codes are under continuous revision to reflect changes in statutes, to incorporate new features, and, of course, to fix known errors. These changes, even the fixing of errors, can introduce errors. Changes to code impact the reliability and future maintainability of the code, some improve it, and some worsen it. Of course, the key question of whether the software fulfills its promises is yet another dimension of quality.

10. Percent of annual operating budget allocated to the acquisition, production and maintenance of Administrative, Enabling and Product Software



Definition of software: Software was categorized into Administrative Software, Enabling Software, and Product Software to reflect the character of usage and, to some extent, to trace the character of software as it has asserted itself into the affairs of business entities. The categories are defined as follows:

Administrative Software: software used to administer the organization. Examples would be payroll and word processing software. Historically, the incentive to use this type of software has been related to the size of the organization because large numbers of transactions justified the costs of automation; but with the advent of microcomputers, very small businesses find it economical to use administrative software. Failure of this type of software may not impact performance for the customer, but might damage a business' relationship with customers, creditors, suppliers, or stockholders.

Enabling Software: software used in manufacturing a product or in delivering a service. Examples would be machine tool control software, reservations scheduling software, or automatic teller software. This is the category of software that requires an understanding of the business. Failure of this type of software would directly impact the ability to perform, to produce the product, or to deliver the service.

Product Software: software embedded in part of the product. Examples would be software integral to medical instrumentation, software in a microchip used in lieu of control circuitry, or end-user software itself in the case of a software or systems consulting company. Failures of this type of software have the potential for tragedy. Human life may be at risk, product performance is clearly at risk, and product liability may be an issue. On the positive side, such software has the potential for tremendous competitive advantage, improved performance, and lower unit cost to produce the product in quantity.

Software expenditures: make vs. buy decision: Figure 10 presents a summary of the level of expenditure on each of the three categories of software. Administrative Software is well institutionalized in the budgets. Modal values for both Administrative Software and Enabling Software are in the range of 1 percent to 5 percent of operating budgets. Product Software, however, is totally absent from the budgets of nearly half the respondents. It is interesting to note that large expenditures, more than 10 percent of the operating budgets, exist in all three categories of software.

It would appear that respondents are generally knowledgeable about their vulnerability to low quality software; however, an increasing fraction of the operating budget expended for software was not proportionate with more frequent use of formal software quality standards. Figures 11.a, 11.b, and 11.c illustrate this point.

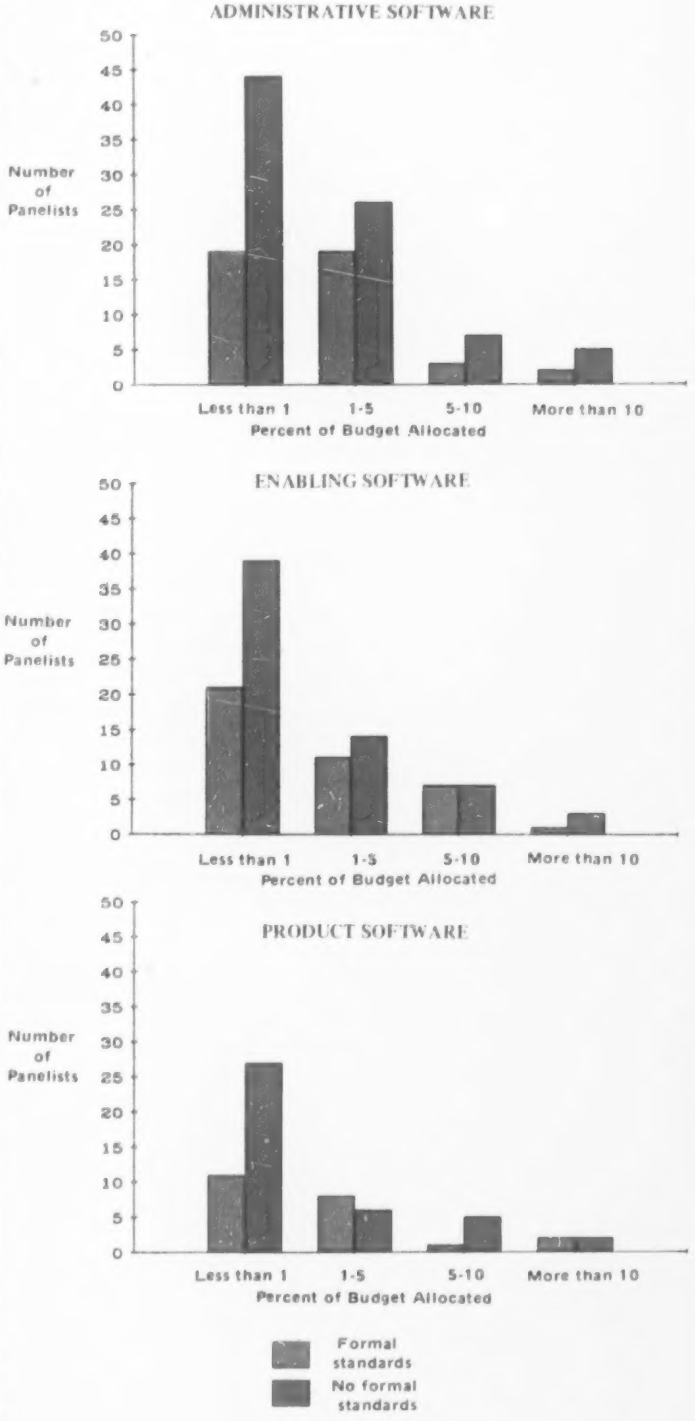
Similarly, the decision to make or buy software appears to be more a matter of policy than of analysis. The data suggest that the make-or-buy decision is based upon established policy rather than case-by-case analysis. Figures 12.a, 12.b, and 12.c show the make (in-house development) versus the buy (commercially acquired) patterns reported for each category of software.

Who is spending more than 10 percent of the operating budget on software? (This figure does not include hardware, data communications, and other typical data center costs.) The questions were specifically addressed to software acquisition, maintenance, and development. A total of 15 respondents are spending in excess of 10 percent of their operating budgets on software.

These results are not surprising. Product Software, rapidly becoming a major consideration for business, is pressing the quality issue harder than the other categories of software.

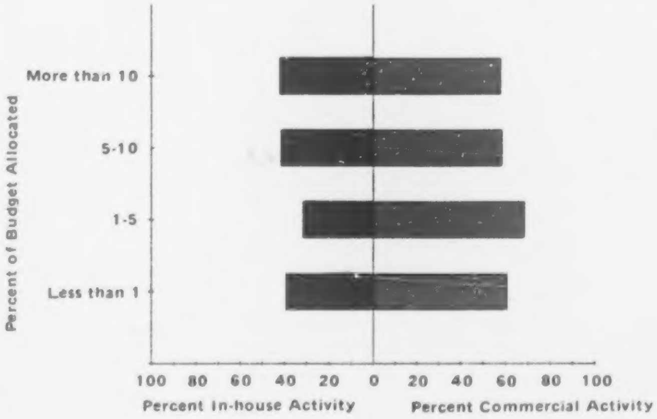
Software used administratively or to enable the delivery of service or the

11. Formal quality standards by percentage of annual operating budget spent for each of three types of software

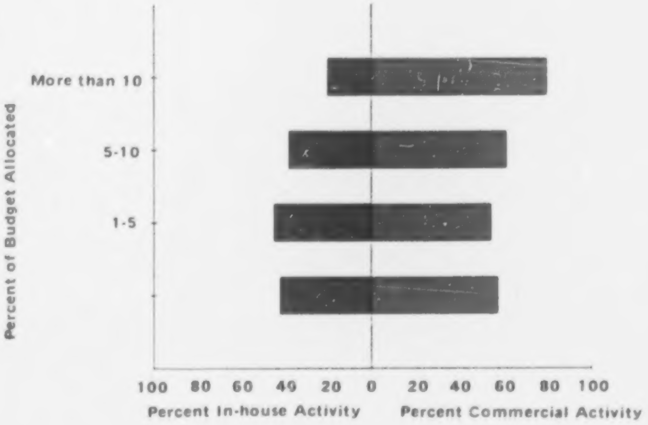


12. Distribution of annual operating budget by percentage for each of 3 types of software

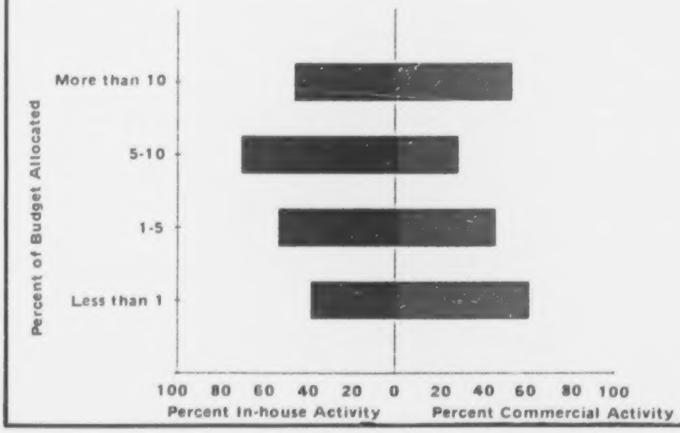
ADMINISTRATIVE SOFTWARE



ENABLING SOFTWARE



PRODUCT SOFTWARE



manufacture of goods is still, in most respects, within control of the business entity and not impacting the customer directly. If such software is impacting the customer, the provider of the service will usually be well aware of that impact (as in the case of a reservation system misdirecting information, whereas with Product Software, the tie between the provider of the product and the customer, may have long since been severed.

Software quality standards. Software quality cannot be a casual matter. Those who strive for quality will have formal quality standards. Those who do not have formal quality standards are accepting the norm of the software industry, or their local norm, or are trusting software quality to have surrogates that will point out lapses in quality. Outlook Panel members were directly asked: "Does your organization have formal quality standards, house rules for the production, maintenance and acquisition of software?" Responses as tabulated by industry group are presented in Figure 13. Only the manufacturers report more with formal standards than without. In total, 32 percent of the organizations surveyed have formal standards.

Since software failures, software inadequacies, late software, and misunderstood software can all lead to serious problems within an organization, two questions were posed for the purpose of probing the depth of such experiences within the panel. While the results are by no means startling, the fact that litigation or serious confrontation has been necessary in each industry group substantiates that low quality software is an industry-wide problem. Figure 14 shows that 13 percent of the respondents have found it necessary to confront issues of inadequate software, while Figure 15 shows that organizations reporting equally serious confrontation regarding the quality of software used in their services was 3.5 percent.

The issue of standards is then revisited by two questions which seek to separate the general case presented in Figure 13 into (1) standards enforced

SOFTWARE QUALITY

The concept of cutting a string precisely in half is intellectually easy but physically impossible, although one can get as close as our best measuring instruments can discern. The concept of working a jigsaw puzzle with ten million pieces is intellectually numbing, but it is physically possible through an exhaustive attempt to attach each remaining piece to the perimeter of those thus far reached. Whereas the analog world easily and usually admits approximation, the digital world demands precision from among choices that exist in combinatorial explosion.

The question of software quality arises from the growing dependence upon what turns out to be a complex task for humans. Because of combinatorial explosion, the creation of software is an exceedingly difficult process. The fact that it is discrete and tractable, like a jigsaw puzzle, causes the task to be underestimated.

Testing software is even more difficult than creating software. At least the writer of code has some specification of the problem to be solved. The tester of code must go beyond the world of legitimate data and uses to consider the world of illegitimate possibilities as well. Illegitimate possibilities cover the gamut from silly mistakes, to unanticipated combinations of inputs, to hostile efforts to intrude on and compromise the performance of the software in operation. Quality software results from both skilled development and equally skilled testing and analysis.

Software quality is a subtle issue. Programs or codes that have been in use for 20 years can still fail. All programs still contain errors ("bugs," as they are forgivingly called in the trade). It is virtually impossible to prove a program correct. This is true of codes that have provided many hours and years of service. There was a saying that the IBM 650 computer (circa 1960) never made an undetected error. Perhaps programs do not make undetected errors either.

Figure 13. Formal quality standards for production, maintenance and acquisition of software, by industry group

	Percentage of Firms Responding		
Industry Group	Yes	No	Not Considered
Finance	35.0	60.0	5.0
Manufacturing	52.2	41.3	6.5
Service	12.5	68.8	18.8
Trade	17.4	73.9	8.7
Other	27.3	63.6	9.1
Total Panel	31.5	58.7	9.8

Figure 14. Serious confrontations with software vendors over an issue of software quality, by industry group

	Percentage of Firms Responding		
Industry Group	Yes	No	Not Considered
Finance	10.0	85.0	5.0
Manufacturing	10.9	82.6	6.5
Service	12.5	71.9	15.6
Trade	21.7	69.6	8.7
Other	13.6	77.3	9.1
Total Panel	13.3	77.6	9.1

Figure 15. Organizations reporting customer complaints related to quality of software used in product or service, by industry group

	Percentage of Firms Responding		
Industry Group	Yes	No	Not Considered
Finance	0.0	95.0	5.0
Manufacturing	2.2	84.8	13.0
Service	3.1	78.1	18.8
Trade	4.4	87.0	8.7
Other	9.1	77.3	13.6
Total Panel	3.5	83.9	12.6

Figure 16. Organizations having formal quality-control procedures for software acquisition, by industry group

Industry Group	Percentage of Firms Responding: Yes	No	Not Considered
Finance	25.0	70.0	5.0
Manufacturing	39.1	52.2	8.7
Service	15.6	65.6	18.8
Trade	26.1	65.2	8.7
Other	18.2	59.1	22.7
Total Panel	26.6	60.8	12.6

Figure 17. Organizations having formal quality-control procedures for software distribution, by industry group

Industry Group	Percentage of Firms Responding: Yes	No	Not Considered
Finance	30.0	55.0	15.0
Manufacturing	21.7	43.5	34.8
Service	15.6	46.9	37.5
Trade	26.1	43.5	30.4
Other	22.7	54.6	22.7
Total Panel	22.4	47.6	30.0

(continued from p. 15)

relative to software coming into the organization versus (2) standards enforced relative to software going out of the organization in the form of products. These responses are presented as Figure 16 for incoming software and Figure 17 for software going out. Manufacturing is the only sector wherein fewer affirm the existence of standards for outbound software than for inbound software. The total number of "no" answers (68) in Figure 17 agrees with the number who reported no expenditures on Product Software.

As long as managers must translate corporate strategy and goals into actions that, in part, take the form of software, organizations are subject to being damaged and causing damage through low quality software. As long as some programmers object to having their codes read and criticized by others, low quality software will be created. As long as the testing of software is less than "adequate," in a mathematical sense, low quality software will be declared fit for use. Litigation always gets the attention of senior executives, whereas the issue of software quality may not. Matters impacting upon the reputation and image of an organization ensue from the leadership in the form of policy and standards. Therefore, in order to get information on the subject of software quality as an issue potentially impacting image and reputation as well as product and service, it was judged necessary to do so in terms that the executive leadership would recognize as important.

Responses to software quality questions were very enlightening. It is clear that Outlook Panel members are living with the issue of software quality, and that it will continue to be an issue of increasing importance for businesses.

Following are samples of Outlook '87 Panel quotes on organizational vulnerability to software failure:

Our vulnerability would be high, if our evaluations and implementation policies fail to prevent catastrophe. **An East Tennessee Manufacturer**

We are small enough that our people would spot early-on any problem of consequence. **A West Tennessee Manufacturer**

We are highly vulnerable to the extent that significant steps are taken to ensure proper operation on an ongoing basis. Also, we are implementing test harnesses solely for debugging and testing new software. **An East Tennessee Manufacturer**

Our systems have extensive protection against any failure. **A Middle Tennessee Utility Executive**

Major software operating systems are provided by our mainframe supplier. Application software is developed in-house by our programming staff. The ability to correct software designs rapidly by in-house personnel reduces our vulnerability to such failures. **A West Tennessee Manufacturer**

We are totally dependent on administrative software, and at least 50 percent of our production is dependent on Enabling and Product software. Consequently we are extremely vulnerable to software failures. **A West Tennessee Consulting Firm Representative**

Quality of software is a continual problem. Each innovation or change generally causes a series of problems until the kinks can be worked out. **An East Tennessee Finance Company Executive** ☐

1987 PANELISTS COMMENT

EAST

A RETAIL TRADE EXECUTIVE: Tennessee will continue to perform economically better than the national economy, but will continue to trail many other sunbelt states. Business relocation and branch establishment will continue to be pursued with moderate results. Economic opportunities for skilled and white-collar labor will continue to be a problem. Schools must be improved and the state must project a more cosmopolitan image to attract highly educated, involved relocatees. Inadequate energy cost containment and efficiency of TVA will continue to be a major weakness. Tourism is an area of strength.

A BUSINESS LEADER: A new governor taking office in 1987 should create some regenerated enthusiasm and should be healthy for business.

AN INSURANCE EXECUTIVE: Overall, Tennessee will do slightly better in 1987 than the national economy. The decline in the dollar should strengthen our manufacturing industries and agricultural exports.

A MANUFACTURING EXECUTIVE: I believe Tennessee's outlook is good mostly because of efforts by the state, the governor, and the legislature in promoting Tennessee to major industrial prospects. Tennessee also has a sound and stable political climate. These factors, along with our available work force and attractive geography, are our assets. Our weaknesses include a strident union component, a complacency among much of our population and, simply, a "backwoods" reputation that will take time to overcome. Our local governments must play an increasing role as catalysts for economic development. We must all, as citizens, invest in our own development.

A WHOLESALER: I expect the economic situation in Tennessee to be about the same in 1987 as in 1986. Because of the new tax laws, commercial and residential construction may be down. I hope that new manufacturing operations will be up.

A MANUFACTURING EXECUTIVE: Manufacturing will see some benefits from the drop in the dollar; agriculture will continue to be depressed. Of concern to me is the intense construction of shopping centers and strip centers built with inadequate levels of demand to support them.

AN ATTORNEY: Tennessee's economy should continue a slow growth in 1987. Improved interest rates could speed up the process. If the U.S. Congress doesn't come to grips with its spending and resulting deficits, the resulting problems could adversely affect all state economies.

A RETAIL TRADE EXECUTIVE: The overall economic outlook for 1987 should be up moderately. Thanks to Lamar Alexander we are a "hot" state economically. Our areas of strength are (1) geographical location, (2) good work ethic, (3) right to work laws, (4) better schools, and (5) chairs of excellence at our universities. Our weaknesses are (1) lack of unity between our major cities, (2) high unemployment in remote counties, (3) lack of education in these remote counties, and (4) too few statesmen in our legislature.

A MANUFACTURING EXECUTIVE: My perception is that new industry (i.e., Saturn) will have an increasingly positive effect on Tennessee for the next few years. Hence, manufacturing is a strength. Agriculture is a weakness.

MID

A MANUFACTURING EXECUTIVE: There is an "air of optimism" about Tennessee. The state is "on the move" and this perception will benefit the state. Tennesseans feel good about the way things are and the way things are progressing – education, jobs, roads – you name it, it is all positive. This positive attitude generates growth.

AN ARCHITECT: I think Tennessee's economic outlook for 1987 is bright. Beyond 1987 should be even brighter with new state tax legislation to complement new federal income tax. Middle Tennessee looks very strong due to the impact of the new industries locating in Tennessee such as American Airlines, Saturn, and Nissan. West and East Tennessee also look better, but we should expect them to lag behind the growth in Middle Tennessee. The construction industry generally will slow down until rental rates or other incomes increase enough to offset losses due to tax changes.

A RETAIL TRADE EXECUTIVE: The tax bill could decrease growth and expansion – loss of ITC. Also foreign competition continues to take business from Tennessee firms. We must become better citizens of the world, and that will require better education.

A MANUFACTURING EXECUTIVE: Tennessee's outlook is very good for the next few years. Industrial recruitment over the past few years is paying off.

A BUSINESS LEADER: Warren Neel (Commissioner of the Tennessee Department of Employment Security) is on the right track with his comments about the two-part economics in urban vs. rural counties – but he has not gone far enough. The 3 grand divisions (and

ON THE STATE OF OUR STATE

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most of the 9 development districts) have very different kinds of economies and different problems. We can't attack problems with state figures which all look like fruit salad. The void in substantial issues and thoughtful solutions in the current gubernatorial campaign is, in part, due to poor understanding of our diverse state's many different economic entities.

A RETAIL TRADE EXECUTIVE: Tennessee's overall economic outlook for 1987 is dismal. Farm commodity prices are too low for farmers to realize a reasonable return. The Tax Reform is going to crush construction and place a burden on business to pass increases in prices along to the consumers. Increased productivity is needed. Tennessee has at least one strength – the cost of living is lower here than most other states.

A GOVERNMENT EXECUTIVE: Tennessee's economy will parallel the U.S., with manufacturing as a leading contributor. Agricultural output will probably be up, but prices will be comparable to 1986. The livestock sector will contribute more in 1987, but crops will continue to be stressed.

A BUSINESS LEADER: Strengths: the major impact on the midstate of both Saturn and American Airlines will be felt in increasing measure in 1987. Other major developments can be expected due to general interest in Tennessee which will uncover the advantages we have. Weakness: the loss of jobs in Tennessee's traditional manufacturing industries, such as chemicals and textiles, will leave us a pool of relatively unskilled, unemployed Tennesseans. Retraining efforts are currently too slow.

WEST

AN INDUSTRIAL DEVELOPER: I think Tennessee's economy will be up slightly because of the amount of industry coming into the state. Also, the Memphis area is doing a great job on distribution and traffic. Of course, the farming industry will be down, but I think overall we will be on the upward side.

A MANUFACTURING EXECUTIVE: I expect the economic outlook for 1987 to be about the same as 1986. Some strengths are the diversity of business in the state and good business-government relations. Some of the weaknesses include farming, prisons, TVA electricity rates, and the state's reliance on regressive sales and property taxes. The new federal tax laws have a downward effect on building and equipment purchases.

A BUSINESS LEADER: Industrial recruitment and the location of corporate headquarters are our strengths. Education still continues to be an area we all need to work on with efforts to increase funding appropriations for our educational system. Increased funding is needed to strengthen programs in community colleges and vocational-technical schools, etc. for hydraulics, pneumatics, robotics, computer technology, and electronics.

A MANUFACTURING EXECUTIVE: Tennessee's overall outlook is good, but the good will be concentrated in the Nashville area and in Memphis. The balance of the state will merely hold its own.

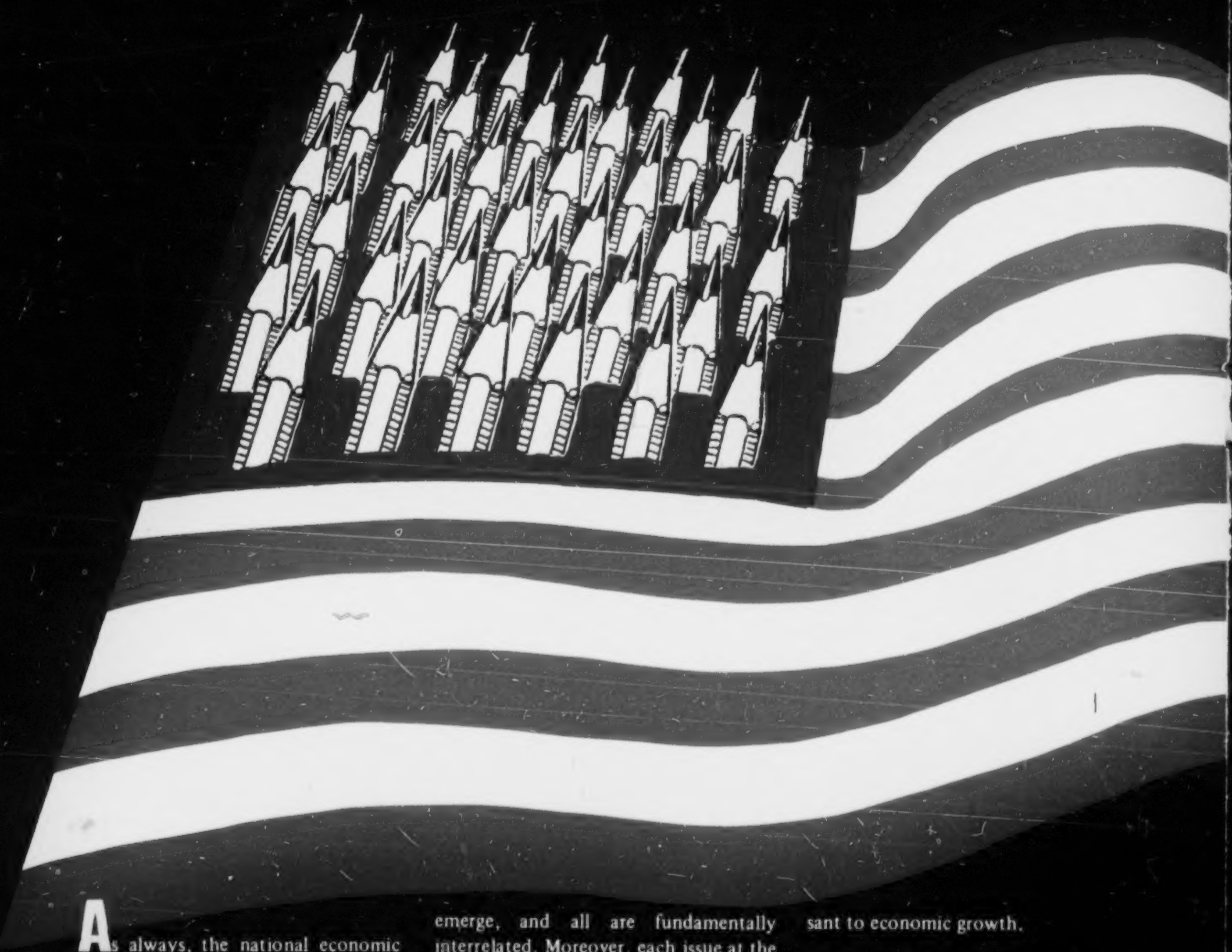
A MANUFACTURING EXECUTIVE: Overall outlook is positive for 1987 due mainly to the strengths of several urban areas. Strengths – pro-business climate, availability of work force, cost of doing business, quality of life. Weaknesses – skills of work force for 1990's, education, tax structure, shortage of qualified teachers, lack of (Tennessee) capital funds.

A MANUFACTURING EXECUTIVE: Because the state has made special efforts in getting the attention of large companies, Tennessee has a very positive trend compared to the balance of the U.S. The people qualities in the state are excellent, and we are attempting to keep it that way through good educational programs that have a direct relationship with industry needs.

A BUSINESS LEADER: Due to the shrinkage of rail transportation, over-the-road trucks are becoming more and more important. Whether it be truck lines themselves or access to interstates, areas with the most availability and accessibility to transportation will survive. The major road program introduced by Governor Alexander is a critical item for Tennessee.

A MANUFACTURING EXECUTIVE: The proper atmosphere of cooperation in manufacturing facilities is imperative if we (America) are to compete in the global market. Team endeavors lead to a competitive product both in quality and price.

A BUSINESS LEADER: New industry in Middle and West Tennessee is very encouraging. Tennessee's tax costs, as well as the transportation services, are "pluses" for the state. Manufacturing should grow; financial services should be extended; health care should continue upward. Concerns include the ability of local governments and businesses to work together to continue to attract additional business growth. ☐



As always, the national economic outlook is uncertain. Yet this year there seems to be an unusually large number of critical short-run and long-run issues that must be addressed in any attempt to improve our vision of future levels of economic activity. Can consumer spending continue to be a strong contributor to economic growth in the short run? Will the burden of the foreign trade deficit drag the economy into a near-term recession, or will the falling value of the dollar begin to turn the trade deficit around? Can the Federal Reserve Board afford to reduce the discount rate a fifth time in 1986, or in early 1987, if economic growth should continue to be soft? Will a continuation of a loose monetary policy rekindle inflationary expectations? How will the tax reform legislation affect economic activity?

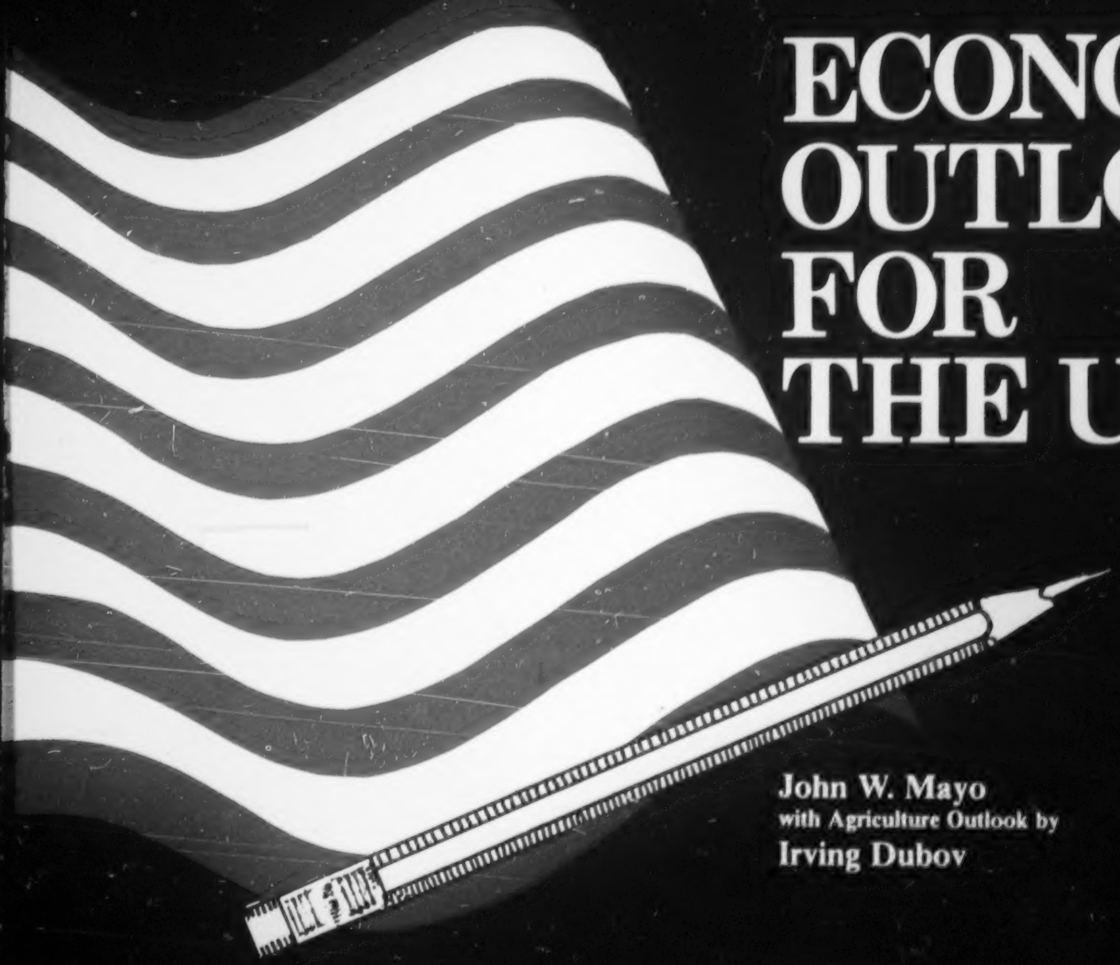
For every issue that can be identified, two or three others seem to emerge, and all are fundamentally interrelated. Moreover, each issue at the national level assumes its own unique twist when applied to the Tennessee economy. Given these complexities and uncertainties, it is especially important to emphasize the traditional caveat that economic forecasting is, at best, rudimentary. Nevertheless, the exercise of identifying the important issues, the subsequent range of debate regarding these issues, and the imposition of the consistency of an economic model in the process is likely to provide significant and reliable information regarding the future of the economy.

Major sources of uncertainty clouding the vision of future economic activity include the federal government's fiscal condition, the effects of tax reform on economic activity, and the growing importance of the international sector as a catalyst or depressant to economic growth.

The Federal Government's Fiscal Condition

In this year's forecast, the contribution of the federal government to economic growth is a major source of uncertainty, emanating from two identifiable sources. First, a host of questions about the fiscal environment and outlook stem from the perpetuation of historically very large federal deficits and the rapid increase in the federal debt burden over the last six years. And second, it is far from clear exactly how the large federal deficits will interact with other major sectors of the economy and indirectly affect the long-term economic outlook.

The essence of the federal fiscal problem can be seen in Figures 1 and 2. Figure 1 is a graphical depiction of the federal outstanding debt over time. The federal debt at any point in time is



ECONOMIC OUTLOOK FOR THE U.S.

John W. Mayo
with Agriculture Outlook by
Irving Dubov

simply the sum of all Treasury securities sold to the public that have not been subsequently retired. Each time the federal government runs a $200 billion deficit, assuming it retires no previous debt, the federal debt grows by $200 billion. In Figure 1, we see that the federal debt grew from $50.7 billion in 1940 to $914 billion in 1980. Beginning in 1981, however, the annual growth rate of the federal debt catapulted to 16 percent as a result of historically unprecedented deficits. As a result, the federal debt has doubled since 1980. Moreover, the amount of federal debt relative to GNP, which had fallen for most of the past 30 years, has now jumped 15 percentage points during the 1980s.

The federal deficits which have driven the growth in the federal debt are seen in Figure 2. While deficits can exert a stimulative effect on aggregate economic activity (ideally to prop up a recessionary economy), they can also be the source of considerable economic mischief. For instance, whenever the federal government runs a deficit, the financing of that deficit will absorb part of our nation's net savings that would otherwise be available for private investment. In recessionary times, the damage done by this "crowding out" of private investment is inconsequential, since private investment is likely to be soft in recessionary times. However, during growth periods, large federal deficits may seriously distort capital markets. For instance, during 1985, financing the federal deficit absorbed nearly two-thirds of national net savings.

Another serious problem created by the string of unprecedented deficits and the run-up of federal debt in the 1980s has been the dramatic growth of the "net interest" component of the federal budget – the interest expense that the federal government must pay on its outstanding debt. This component has grown from $52 billion in 1980 to an estimated $138 billion in 1986. As a result, the payment of net interest has grown from 21 cents of every personal income tax dollar paid in 1980 to almost 40 cents of every dollar of personal income taxes paid in 1986. Aside from being the fastest-growing component of the federal budget, because of its mandatory nature, the payment of net interest raises a set of unpleasant alternatives. Specifically, unless revenue increases occur through tax changes or economic growth, the amount of government expenditures in other areas must either be cut each year or the government must run even larger deficits in each year to finance the interest expense from previously incurred deficits. In the former case, the risk is raised that government activities that are complementary to economic development will be eroded. In the latter, an unstable cycle of spend and borrow, borrow and spend is created that would ultimately undermine the ability of the federal government to function effectively.

Yet another serious problem raised by the perpetuation of the large federal deficits is that it erodes the ability of the federal government to engage in counter-cyclical macroeconomic policies. Consider that in 1986, the federal deficit is estimated by the Congressional Budget Office to be $216 billion. Should the economy soften further with deficits of this magnitude, the option of reducing taxes or raising spending to stimulate economic activity is highly unlikely to be exercised.

Tax Reform

Another major source of uncertainty regarding the national economic outlook is caused by the passage of the major tax overhaul bill this past fall. The goal of the bill was to increase the perceived equity, efficiency, and simplicity of the tax code, while leaving the total tax burden for the country unchanged. For individuals, this goal will mean that a significant number of tax deductions and credits will be eliminated. By broadening the base and shifting more of the aggregate tax burden to businesses, it was possible to sharply reduce the marginal tax rates for individuals. For instance, under the new tax law, the top marginal tax bracket for individuals will fall to 33 percent, down from 50 percent under the current tax code.

For businesses, similar (though again, not total) elimination of tax deductions was the catalyst to lower marginal tax rates. The top corporate tax rate under the new tax law will fall from 46 percent to 34 percent. Despite the reduction in the marginal tax rates for corporations, however, the share of the tax burden borne by corporations will rise under the new tax law.

FIGURE 1

U.S. TOTAL GROSS
FEDERAL DEBT
FISCAL YEARS 1940-1986

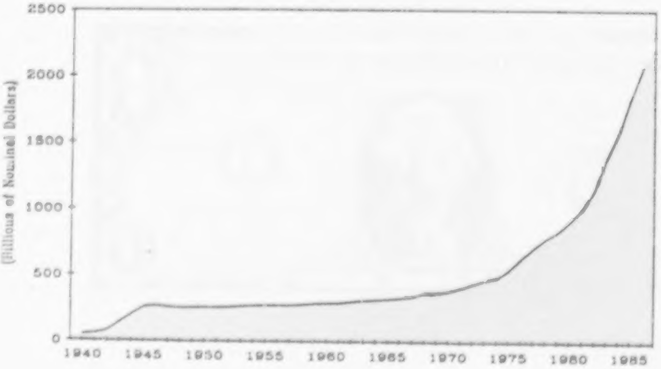
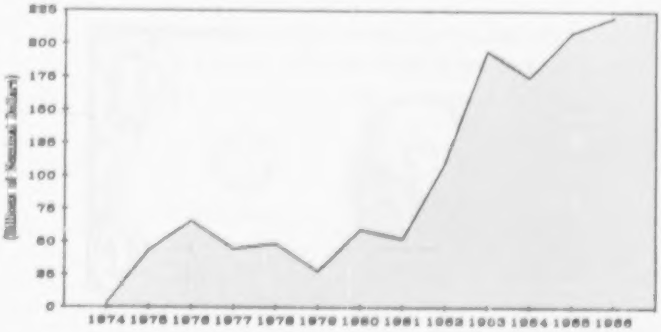


FIGURE 2

U.S. FEDERAL DEFICIT
UNIFIED BASIS
FISCAL YEARS 1974-1986



While a complete analysis of the economic consequences of each and every provision of the new tax law is beyond the scope of this article, it is possible to note the concerns and, where it exists, consensus expressed by the various economists and policymakers who have analyzed the new tax law in considerable detail. The consensus among tax analysts (to the extent that one exists) is that while it seems clear that the introduction of the new law will affect incentives for work, savings, and investment, the net impact of the numerous changes in the various tax provisions is unknown.

Of the variety of concerns raised about the economic impact of the new tax law, three appear to be of sufficient import to mention here. First, there is the fear that elimination of the Investment Tax Credit will reduce incentives for investment. While removing this credit results in marginally reducing the incentives for investment, it may be argued that the combination of lower

The result of the dramatic rise of the dollar and the growing demand for foreign goods was the largest set of merchandise trade deficits ever recorded.

marginal tax rates and other investment-preserving features of the new law may be sufficient to reduce, if not totally offset, this effect. A second concern regarding the effect of the new tax code arises from the shifting burden borne by businesses. Specifically, it has been argued that as the tax rates for corporations go up, the additional burden will simply be transferred to consumers in the form of higher prices. This has caused some concern about renewed inflation. Yet a third concern is that the new tax law will distort consumption expenditures. This distortion, to the degree that it will be observed, is driven by the elimination of state and local sales tax deductibility after 1986. As a result, it is feared that there will be an acceleration of consumer purchases in 1986 and a commensurate drop in expenditures in 1987.

International Trade

Yet another major source of uncertainty regarding the economic outlook arises from the international trade sector. When exports from the U.S. exceed the dollar value of imports into the U.S., there is a net stimulus to the domestic economy. When imports exceed exports, the international sector becomes a net drag on the domestic economy.

There are several economic determinants of the amount of exports from the U.S. Principal among these are GNP growth rates abroad, the value of the dollar relative to foreign currencies, and the level of taxes, tariffs, and quotas imposed on U.S. goods. Similarly, there are a host of factors that affect the level of imports into the U.S. These include domestic economic growth, the value of the dollar relative to foreign currencies, and the extent of domestic tariffs, taxes, and quotas imposed on imports.

During the first half of the 1980s, the value of the dollar rose dramatically relative to foreign currencies. At the same time, the healthy economic recovery of 1983-1985 contributed to a growing demand for foreign goods. As a result, the amount of imports skyrocketed, while exports remained flat. The result was the largest set of merchandise trade deficits ever recorded — $114 billion in 1984 and $148.5 billion in 1985.

When measured by conventional standards, the value of the dollar peaked relative to other major currencies in February of 1985. The subsequent, and more or less continuous, decline in the strength of the dollar has led many analysts to predict a turnaround in the poor trade performance of 1986. Yet, based on merchandise trade deficits of $43.5 billion and $40.5 billion in the first two quarters of 1986, respectively, it now appears that the deficit for this year will exceed all previous levels by falling somewhere in the neighborhood of $150 billion. The perpetuation of this drag on the U.S. economy, especially in light of the apparently large decline in the value of the dollar, has puzzled many and now is causing some rethinking about the nature and causes of U.S. trade patterns with foreign countries.

Specifically, several plausible explanations for the failure of the trade deficit to turn around have now surfaced. First, trade flows are now commonly recognized to respond, with a considerable lag, to changes in relative exchange rates. Economic research indicates that the length of the average lag between exchange rate movements and subsequent changes in trade flows is about 18 months. This suggests that, until recently, we should not have expected a significant turnaround in the foreign trade flows. Second, while the value of the dollar has fallen considerably against the "Index of 10 Major Currencies," the decline has been significantly less pronounced, or nonexistent, against some of the U.S.'s most significant trading partners, most notably Canada, which is the largest exporter to the U.S., as well as some of the countries from the Far East. A third reason for the absence of a turnaround in the trade deficit is that while the value of the dollar has fallen, the prices of foreign goods sold in the U.S. have not fully reflected the effects of the exchange rate modifications. Indeed, in the last period of dollar value declines, the price of foreign goods sold in the U.S. (even nonpetroleum-based imports) actually declined as the result of falling price-cost margins by foreign firms selling products in the U.S. And finally, some analysts have argued that the poor trade performance by the U.S. in the last few years is the result of poor economic growth in countries that typically import U.S. goods, thus reducing the demand for U.S. exports.

With the major sources of uncertainty defined, we can anticipate the most likely scenario for each of the four components of gross national product: consumption, investment, government, and foreign trade.

Consumption

The importance of consumption to the national economic outlook cannot be stressed enough. Consumption constitutes roughly two-thirds of all economic activity and is by far the largest of the four GNP components. Therefore, for the economy to maintain significant growth, consumer expenditures must grow. As can be seen in Figure 3, real personal consumption expenditures, which have grown briskly for the past three years, have been a major impetus for the current expansion.

Recent growth in real personal consumption expenditures has continued to be significant, with second quarter growth at an annualized rate of 6.2 percent and third quarter growth of 6.5 percent. Retail sales growth for 1986 are shown in Figure 4. Even accounting for a normal pattern of growth which occurs each year as we approach the holiday season, sales growth at the national level has been solid during the most recent time period. For at least two reasons, consumption expenditures should continue to grow at least moderately for the immediate future. First, attractive automobile financing rates during the past quarter have stimulated consumer spending during August and September.

And second, the elimination of sales tax deductibility from federal income taxes beginning in 1987 has had the effect of shifting some sales from 1987 to 1986.

While growth of personal consumption expenditures looks solid for 1986 and into 1987, there are some ominous signs on the horizon regarding the ability of consumers to continue to drive economic growth. In particular, consider that the savings rate, the percentage of personal income that is not spent on consumption, has fallen to historically unprecedented levels recently. During the third quarter of 1986 the savings rate fell to 3.3 percent, lower than any quarterly showing since 1947. While there are some reasons to believe that the "natural" savings rate by consumers has fallen recently, the concern that consumers may decide to retrench on spending (i.e., to bolster the savings rate) seems almost a certainty. The only question remaining about the retrenchment is when it will come. Current projections suggest that it will not come until 1989; however, the growth rate of consumption for 1987 should slow from its rapid pace of the last three years. This prognosis must be considered particularly tentative, however, given the near-record level of consumer debt as a fraction of personal income.

FIGURE 3

U.S. REAL PERSONAL CONSUMPTION
EXPENDITURES GROWTH RATES
1980–1985

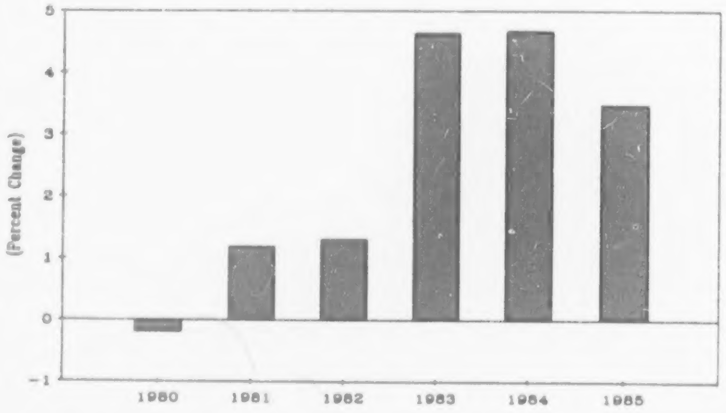
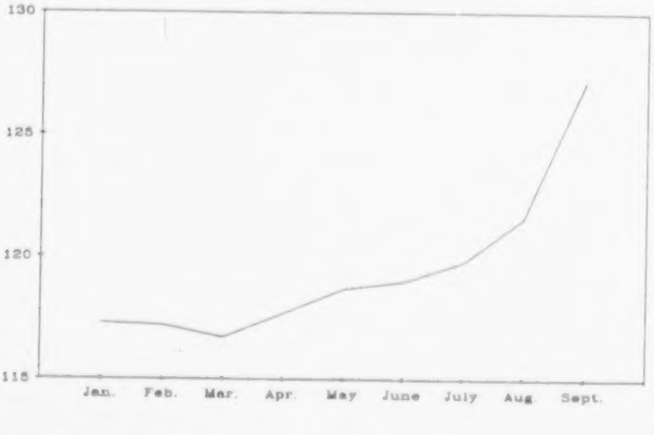


FIGURE 4

U.S. 1986 RETAIL SALES
(Billions of Nominal Dollars)



Investment

Investment is composed of business-fixed investment, residential investment, and inventory investment. Of these components, the largest is business-fixed investment, which is largely determined by a combination of real interest rates and aggregate economic activity. Residential investment consists of the building of single-family and multi-family dwellings. Inventory investment, which is the smallest of the investment components, is typically viewed as a residual item that grows and shrinks with overall economic activity.

The pattern of business-fixed investment for the past few years has been distinguished by its volatility. It is worth noting that much of the acceleration in business-fixed invest-

By 1988, the effects of the depreciation in the dollar exchange rates will have garnered sufficient momentum to create a small improvement in the balance of trade.

ment during 1983 and 1984 can be attributed to cost-saving investments in personal computers and telecommunications equipment rather than expansion of production capacity.

Business-fixed investment has been quite slack during the first three quarters of 1986. Moreover, according to the Commerce Department's latest survey of capital spending plans further declines are likely. That survey found that, after adjustments for inflation, businesses planned to spend 2.5 percent less in 1986 than in 1985. Should these reductions occur, they will be the first since 1983. The softness in business-fixed investment appears to be driven by a combination of the perpetuation of relatively low capacity utilization rates, the crash of investment in the oil sector, and adjustments to tax reform. Residential investment in housing should bolster aggregate investment in 1986, despite the recent slowdown from the frenetic pace of housing investment that was occurring earlier in the year.

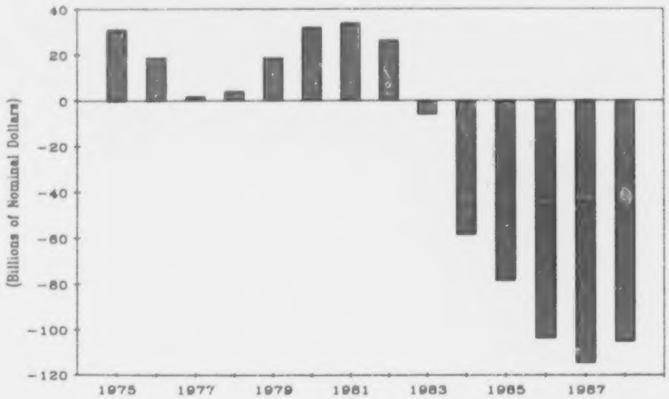
The outlook for investment activity in 1987 and 1988 is one of moderate improvement. Business-fixed investment is forecast to rise by 0.6 percent in 1987 and 4.1 percent in 1988. This forecast should be interpreted with care, however, since it is predicated on the forecast of continued growth in consumption expenditures and the maintenance of slightly higher but still moderate interest rates. Residential investment should also remain solid in 1987, with only a slight decline in housing starts, though by the end of this period the effects of slightly higher mortgage rates will begin to temper residential investment.

Government

In the first year of the Gramm-Rudman-Hollings (GRH) Balanced Budget Bill, the Supreme Court ruled the mandatory portion of the cuts unconstitutional. The implications of this court action are not entirely clear, but it does appear that GRH will have some, but not much, impact on federal deficits in the absence of this legislation. Indeed, the estimates by some analysts of declining federal deficits are largely the result of overly optimistic economic growth projections and temporary increases in revenues associated with tax reform. Federal deficits are forecast to remain in the $180 billion to $200 billion range during the next three fiscal years. This forecast is predicated on generally austere growth in both federal government expenditures and in revenues. No significant tax increase is projected for 1987 or 1988. It is worthy to note that should the federal government actually undertake the drastic budget cuts or tax increases necessary to achieve the GRH targets, the effect of the government sector on aggregate economic activity would be notably restrictive in the short run. It would be only in the longer run that the beneficial effects of reductions in the structural deficit would manifest themselves.

FIGURE 5

U.S. NET EXPORTS OF GOODS AND SERVICES, 1975–1988



Foreign Trade

As already noted, the behavior of the foreign trade sector has been somewhat enigmatic because declines in the dollar since February 1985 have not yet produced a turnaround in the balance of trade figures. But for a variety of reasons discussed under Major Economic Uncertainties, this sector is likely to see a slight worsening over the next 12 to 16 months. This decline will occur despite a continuation of a modest downward trend in the value of the dollar relative to other major currencies. By 1988, however, the effects of the depreciation in the dollar exchange rates should have had sufficient time, and will have garnered sufficient momentum, to create a small improvement in the balance of trade. The history and forecast of the net exports of the U.S. are seen in Figure 5.

Gradual improvements in the balance of trade are expected beyond 1988. It is important to note, however, that these long-run improvements are contingent upon positive developments in the current round of the Generalized

Agreement on Trade and Tariffs (GATT) talks that began in September of 1986. Specifically, these agreements, which have served as the guidelines for promoting multinational free trade since the end of World War II, need to be expanded beyond merchandise to include "services," which are a competitive strength of the U.S., if the U.S. is to be effective in the world marketplace.

Overview

The national economic outlook is particularly unsettled this year due to a number of uncertainties in the areas of the federal government's fiscal condition, tax reform, and foreign trade.

Accounting for these uncertainties and the commensurate recessionary risk, it appears that the national economy will enjoy moderate growth during 1987. Despite the continuation of a weak foreign trade sector and an increasingly impotent federal fiscal policy, real GNP should grow nearly 2.5 percent during 1987, based on the continued growth of consumer expenditures. The robustness of this forecast, however, is highly sensitive to the continuation of consumer expenditures growth. Our growth projection is somewhat less than the 3.7 percent growth anticipated by Wharton Econometric Forecasting Associates (WEFA) when this forecast was begun, though it should be noted that WEFA and other national forecasting services have significantly reduced their estimates of forecasted growth in recent months. By 1988, both the foreign trade sector and investment will make modest improvements, and real GNP growth will reach 3.2 percent. The combination of an increased rate of inflation, a subsequent tightening of the money supply by the Fed, and an ultimate retrenchment by consumers should lead to an economic downturn in 1989.

Agriculture

The October 1986 USDA forecast on net farm income indicates a drop from $30.5 billion in 1985 to between $25 and $29 billion in 1986 and a continuation of erosion in farm asset values. Between 1981 and 1986 the drop was almost 27 percent, and for the years 1985-86 a 5 percent decline is estimated. Between 1981 and 1986, farm real estate values fell over 31 percent, and total farm equities were reduced $288 billion. Thus, the outlook for the production Agriculture sector in 1987 is the same as last year's — continuing economic stress.

There is little change in the outlook for aggregate farm level demands of domestic origin. Changes in tastes and preferences and relative prices of competing products may affect quantities of individual products sold. For example, between 1980 and 1987 the USDA estimates an 8.7 percent per capita decrease in consumption of total poultry meat. Total domestic farm-level demands are highly price- and income-inelastic; and the critical "swing factor" affecting farm prices and incomes are changes in export demands.

The unfavorable relative price situation reported last year for production agriculture also remains the same. The October 1986 Index of Prices Received by Farmers for all farm products was 121 percent (1977 = 100), whereas a year ago it was 123 percent. The Index of Prices Paid by Farmers for Commodities and Services, Interest, Taxes, and Farm Wage Rates declined two points over the 12 months from 162 to 160. A good part of the drop was attributed to lower feed and fertilizer prices. The ratio between the two indexes remained the same, 76 percent, at both points in time.

The Short-term Crop Outlook

If 1986 corn yields reach the expected average of over 120 bushels per acre, this would be a record high and a 2 percent increase over 1985 yields. At the same time, harvested acreage is expected to be 8 percent less than in 1985. The result would be a 6.2 percent production decline. Sorghum yields and harvested acres are expected to decline enough in 1986-87 to drop production almost 23 percent, to 860 million bushels. In addition, reductions are expected in oat production — down 14.5 percent to 443 million bushels. Although 1986 soybean production is expected to decline almost 6 percent, ending stocks will be 10.3 percent greater than last year's 535 million bushels. Domestic cotton production is expected to decrease almost 22 percent, down to 10.5 million bales.

Livestock Products

With respect to major livestock products, beef production is expected to decline 5 to 6 percent in 1987 while little change is expected for either production or per capita consumption of pork. Increases are expected in supplies of all poultry meat in response to continuing favorable feed/product price relations and sales successes of new products, including those marketed through fast food outlets. After an estimated 1.4 percent increase in total milk production in 1986, no increase is expected for 1987, with the possibility of a 1 to 3 percent decrease.

Due to reduced acreage allotments and quotas and yields that were reduced by low rainfall, the 1986 burley tobacco crop is forecast to be 24 percent below that for 1985. However, lower prices are expected because of lower price support levels.

Key Factors

Key factors that affect the 1987 outlook include prices of important inputs, governmental price and income support programs, and developments in overseas producing areas.

Looking first at input prices, USDA estimates of capital expenditures for tractors and farm machinery in 1986 are about $5 billion — less than half the $10.22 billion in expenditures made only five years ago in 1981. These numbers also reflect a 56 percent decline in tractor sales and a 49 percent reduction in farm machinery sales between the two periods. With the cutbacks in planted acreages expected to result from USDA programs to reduce feed grain production, the 1987 demand for farm machinery and tractors is not likely to pick up. Added to this scenario are the effects of declining exports of these items (mainly to Mexico, Australia, and Saudi Arabia) and increased imports (from Japan and

The official USDA position in October 1986 anticipated that farm export volumes will increase significantly in 1987 in response to commodity price declines.

West Germany). The result should be downward pressure on farm machinery and tractor prices in 1987.

Effect of Crude Petroleum Prices

Crude petroleum production and prices directly and indirectly affect costs of many inputs – liquid fuels, natural and LP gas, electricity, fertilizers, pesticides, and herbicides. In 1986, refined petroleum products have been available in adequate supplies at prices substantially lower (more than 25 percent) than in 1985. The expected result is a $1 billion reduction in aggregate farm production expenses in 1986. Barring unforeseen developments, the safest expectation is for crude oil prices of about $15 to $17 a barrel in 1987 and little change in prices paid by farmers for gasoline and diesel fuel. Similar expectations apply for prices and availabilities of natural and LP gas.

Energy

As mentioned earlier, energy is used in the manufacture of key inputs such as fertilizers, pesticides, and herbicides. The USDA estimates that over 40 percent of the total energy used for production agriculture went into the manufacture of the above-named input groups. And so, given the overall reduced input requirements that result from farm program-induced acreage cuts, supplies of liquid fuels and other energy and energy-based inputs should be quite adequate in 1987. Further, prices of these items should not differ much from those prevailing in 1986.

Farm Policy Changes

In late October, in response to rapidly increasing surplus stocks of farm products and burgeoning costs of programs already in place, USDA announced a major change in farm policy which concerns decreased use of land for production of corn, sorghum, barley, and oats. In addition to the 20 percent of their acreages that farmers must keep idle to obtain 1987 price and income support payments, farmers who remove an additional 15 percent of their acreages from feed grain production will be eligible to receive up to $2 per bushel for reduced outputs of these products.

Export Markets

There appear to be two points of view regarding prospects for recapturing the farm export markets of the 1970s. The official USDA position in October 1986 anticipated that farm export volumes will increase significantly in FY 1987 in response to commodity price declines. This view holds also that in the longer term, U.S. agricultural trade will increase in lagged response to effects of the 1985 Food Security Act and lower dollar exchange rates.

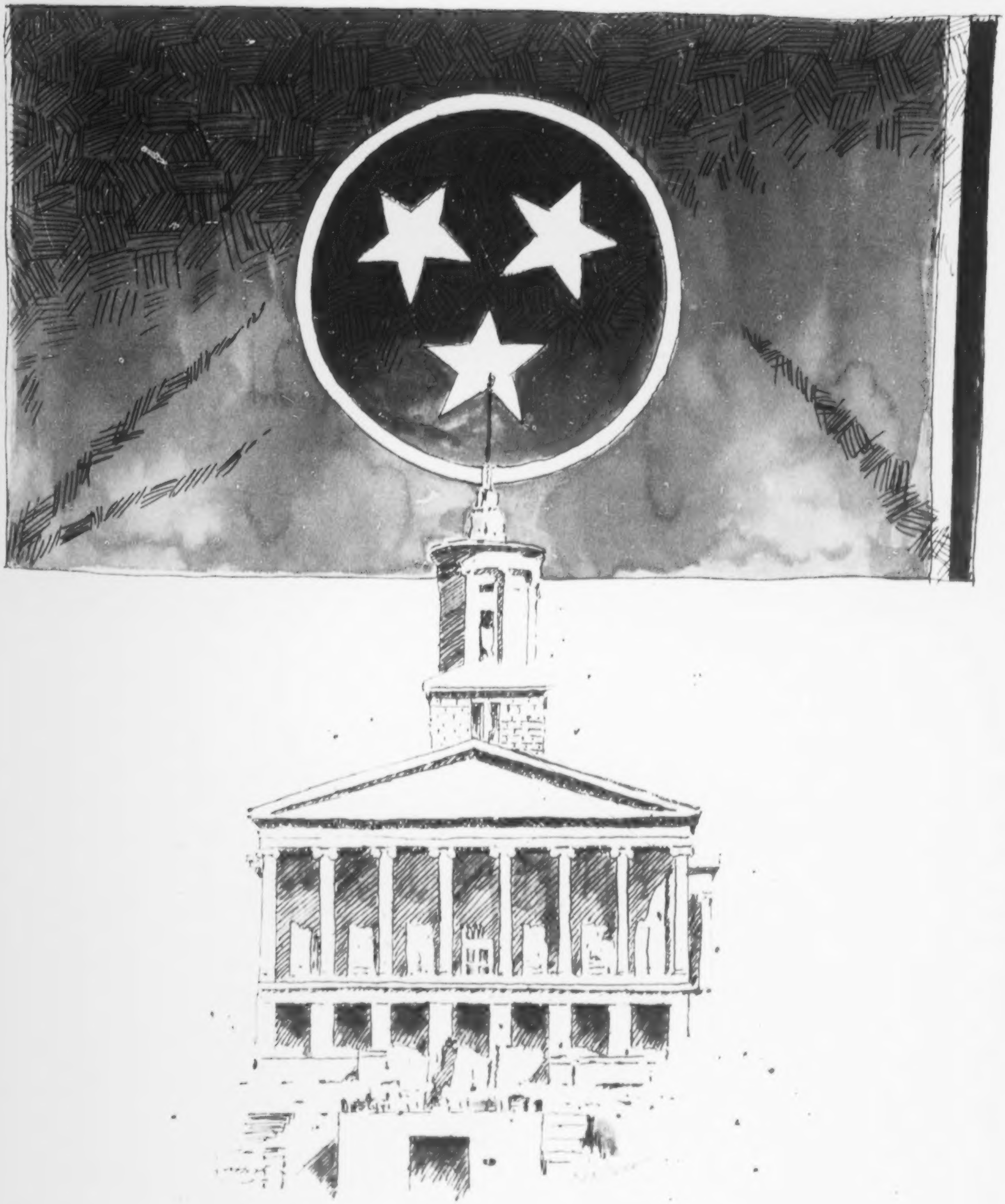
An alternative interpretation of the situation is less sanguine. The conditions of the 1970s that resulted in the phenomenal expansion of U.S. farm exports were due to a unique set of juxtaposed conditions – strong economic growth in importing nations, abounding credit to finance the exports, and a relatively undervalued U.S. dollar. The long-term situation, however, is one of chronic excess capacity in American production agriculture in relation to normal domestic and export demands. Moreover, many fundamental changes have been underway in the U.S. agri-business economy. The U.S. Department of Agriculture and the U.S. Department of Labor estimate that almost one million jobs in production agriculture and its infrastructure industries, such as farm tractors and machinery, supplies, transportation, and food processing, have been phased out because of these changes.

The Immigration Reform Act passed by Congress in October 1986 could bring substantial changes to the production Agriculture sector in the Southeast. Technological developments in production techniques are improving the competitive position of southeastern states in raising fruits and vegetables. Lower average prevailing farm wage rates in the Southeast (resulting from the Immigration Act) and lower shipping costs to populous eastern metropolitan market areas would provide excellent opportunities for southeastern growers to compete with traditional sources of supply in the far West.

Other fundamental changes that affect the Agriculture sector, particularly in terms of overseas markets, include policies and practices followed by the European Economic Community to insulate their trade and production areas against external shocks, fluctuating exchange rates, and/or prices.

Policies concerned with attaining food self-sufficiency, regardless of overall economic consequences, have resulted in the development of rapeseed production/processing technology to eliminate biochemical elements that are undesirable when the product is used in poultry feeds. Another change is that France now has a definite comparative advantage in wheat production resulting from both the development of improved technologies adapted to their growing conditions and a policy of high guaranteed prices that create an attractive, risk-free environment for investment in that improved technology. The Soviet Union was formerly the second largest market for U.S. farm exports; now it buys virtually no wheat, and this year its purchases of U.S. grains were less than 40 percent of 1984-85 purchases.

In summary, the Agriculture sector will enter 1987 in the same straits as it did in 1986, principally because of the contraction in farm export markets that occurred during the 1981-86 period. Two lines of action are possible. The first, and one that can bring short-term relief, is to reduce output by production control programs. The second, a slower and longer-term approach, is to reduce federal budget deficits enough to lower real interest rates at home and abroad and to reduce U.S. dollar exchange rates. Realistically, some combination of the two approaches is required.



ECONOMIC OUTLOOK FOR TENNESSEE

William F. Fox
David M. Mandy
Matthew N. Murray

The Short-term Outlook for Tennessee

During the expansion of the national economy over the past four years, the Tennessee unemployment rate has dropped, and both employment and personal income have grown. From November 1982 to September 1986 unemployment in the state decreased from 13.2 percent to 7.7 percent; employment grew by 13.8 percent; and personal income rose by 15.1 percent net of inflation.

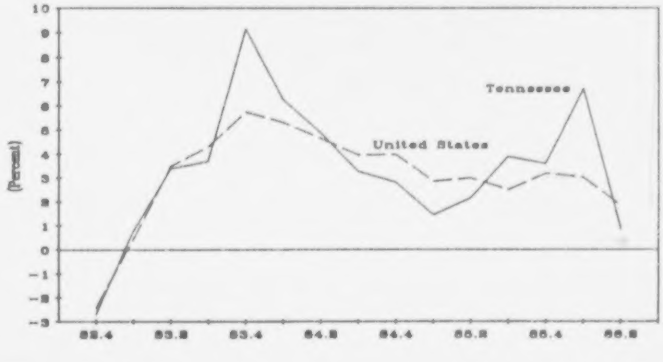
The past year's economic performance has generally been good, as employment in 1986.3 is 3.9 percent higher than in 1985.3.[1] In addition, Tennessee employment growth significantly outperformed the U.S. over the past year, with services, trade, state and local government, and construction employment leading the robust growth.

Generally Tennessee can be expected to follow the national economic trends outlined in the previous article; however, employment growth in Tennessee during the current economic expansion has at times been both higher and lower than the nation's. Those variations are illustrated in Figure 1. Differences between regional and national economic growth is also evident in the farm- and oil-related problems confronting states such as Iowa and Louisiana. These states' economies are experiencing recession-type symptoms in the midst of the national expansion. The structure of each region within the U.S. must be considered alongside national economic trends to determine how the region will be affected by national growth patterns. Moreover, despite the sustained expansion in the Tennessee economy over the past four years, there has been considerable diversity in the growth of different counties and industries within the state. Recognition of the diversity is essential to understanding effects of the expansion.

Geographic Diversity

The Middle Grand Division grew faster than either the East or the West Grand Divisions between 1980 and 1985 and during the expansion years of 1982 to 1985. The East Grand Division grew faster than the West over the longer time period, but the West grew more rapidly during the economic expansion years of 1982-1985.

FIGURE 1
TENNESSEE AND U.S. NONAGRICULTURAL JOB GROWTH RATES, 1982.4 TO 1986.2
(Seasonally Adjusted Annual Rates)



Economic growth in the middle of the state was stronger because of broad-based growth across industry sectors. (See Table 1). Growth in Middle Tennessee was higher than the other regions in the Construction, Manufacturing, and Finance, Insurance, and Real Estate (FIRE) sectors. But growth was generally good in every sector, and government was the only sector where decline occurred.

Over the five-year period, services and trade employment expanded faster in East Tennessee than in the other areas. This means that growth was vibrant in those industries where the national economy was increasing fastest. However, Construction, Mining (not shown), and Manufacturing employment declined in East Tennessee. Employment growth was also very weak in Transportation, Communications, and Public Utilities (TCPU) and Finance, Insurance, and Real Estate (FIRE). Overall, this means that East Tennessee's employment growth has not been sufficiently broad-based to sustain a high-average growth rate. The structural change which has been occurring in manufacturing is one of the reasons. The growth rate should accelerate after the structural declines have occurred in industries such as leather goods, apparel, textiles, and chemicals.

TCPU grew faster in West Tennessee than in the other regions. Manufacturing, Mining, and Government declined, and employment growth in Services and Trade was very weak. Although acceleration of growth in the western part of the state during the expansion has been very strong, since the Services and Trade sectors have remained weak, West Tennessee has grown more slowly because it has not participated fully in expansion of the most vigorous parts of the U.S. economy. Of course, this problem may stem partly from the fact that West Tennessee has many rural areas.

Diversity can also be seen in growth across rural and urban parts of the state. The urban counties increased 12.2 percent on average between 1980

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[1] Numbers after the decimal indicate quarter of the year.

TABLE 1

NONAGRICULTURAL JOB GROWTH RATES FOR TENNESSEE INDUSTRIES AND REGIONS, 1980-1985

	Region		
	East Grand Division	Middle Grand Division	West Grand Division
Manufacturing	-1.0	5.0	-5.8
Construction	-2.3	16.2	2.6
Trade	28.6	23.6	10.6
Finance, Insurance, and Real Estate	9.7	18.4	11.9
Services	36.8	27.4	21.0
Government	3.0	-4.2	-2.5
Transportation, Communications, and Public Utilities	7.7	11.4	14.4

and 1985, while the rural counties increased only 3.4 percent. It is interesting that the rural places showed growth in Manufacturing, while that sector declined in the urban places. Rural counties experienced a greater manufacturing employment rebound during the expansion years. The FIRE sector also has grown more rapidly in rural areas relative to urban areas, but this growth probably results from restructuring of the sector in the urban counties. Large declines in the Financial sector have occurred in the Knoxville MSA, and consolidation of some insurance activities may have occurred in urban parts of the state.

Urban places have expanded much more rapidly in the Services, Trade, Construction, TCPU, and Government sectors. This expansion is evidence that problems with rural employment growth arise because of failure to attract the growth industries into rural counties. If rural areas are to serve as more than bedroom communities for urban places, it will be necessary for them to attract more Service and Trade employment. In that regard, CBER recently conducted a survey for the Department of Economic and Community Development designed to determine the factors which were important to the choice of the broad region in which firms have located. One enlightening conclusion was that access to markets was the most important consideration for service firms. This makes attraction of these firms to some rural places more difficult.

There are many differences across counties within both urban and rural places. First, the data show evidence that there have been rapidly growing, as well as declining, counties in both rural and urban areas. Second, the data indicate that manufacturing employment losses have occurred in some rural as well as some urban counties. Seventeen rural counties lost more than 11 percent of their manufacturing employment during the half-decade. Conversely, manufacturing growth has occurred in some urban counties (those in the Nashville metropolitan areas, for example). Other data would suggest that generally the durable manufacturing industries have grown while the nondurable industries as a group have declined or remained stable. In sum, this means that structural employment losses (those arising from industry moving out of a region) from manufacturing shifts have occurred in many rural and urban counties. Carefully designed economic development strategies are necessary to overcome structural unemployment, because people who are structurally unemployed often do not have appropriate skills to secure jobs that pay what they regard as fair wages.

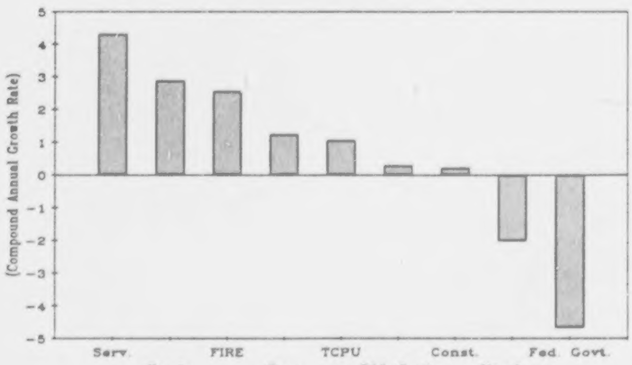
Industry Diversity

Differences in growth rates by industry type have also emerged. The services industry has led Tennessee's growth across the first half of the 1980s (Figure 2). Business services, including data processing, law, and accounting, have been the source for much of this growth. Health care and temporary employment agencies are other strong areas. Trade employment growth has been very vigorous as well, since consumer spending initiated and then sustained the expansion. FIRE was the other sector which, on average, grew more than 2.0 percent annually over the five years.

Manufacturing employment for durable goods grew slightly during the 1980-85 period, but employment for nondurable goods declined. Overall, manufacturing employment declined over the five years. It should be noted that manufacturing employment peaked in late 1978, and the declines appear to be much greater when measured against the peak. Chemicals, leather, apparel, and textiles are responsible for most of the nondurable employment declines. For leather, apparel, and textiles, losses are probably the result of increasing competition from overseas, whereas chemical employment losses result from capital investment designed to increase productivity from a smaller work force while maintaining past output levels. Chemical industry declines have been smaller than they appear from employment data because some firms were recategorized. One nondurable industry, printing and publishing, has shown considerable increases over the time period. Most of the durable goods manufacturing employment increases have been replacement of losses incurred during the recession, though

FIGURE 2

TENNESSEE NONAGRICULTURAL JOB GROWTH, 1980-1985



Serv. – Services
Trade – Wholesale and Retail Trade
FIRE – Finance, Insurance, and Real Estate
Dur. – Durable Goods Manufacturing
TCPU – Transportation, Communications, and Public Utilities
S&L Govt. – State and Local Government
Const. – Construction
Nondur. – Nondurable Goods Manufacturing
Fed. Govt. – Federal Government

there appears to be trend growth in transportation equipment and nonelectrical equipment. (The effects of Saturn are not reflected in these data.)

Federal government employment in Tennessee also declined, particularly as a result of TVA cutbacks in the nuclear power construction program. Such structural declines in manufacturing and government have prevented the Tennessee economy from growing as rapidly over the past five years as would have been expected.

Essentially, the major sources of uncertainty regarding the national economic outlook include the federal government's fiscal position, tax reform, and the foreign trade sector. In an examination of the effects of these issues as they relate to the Tennessee economy, the major risks are that one or more of these factors will differ significantly from the expectations that are reflected in the forecast.

Tax Reform

Although the effects of federal tax reform are difficult to quantify and are likely to be the result of many conflicting and subtle economic forces, it is still possible to judge the near-term effects on some individual sectors. First, the cost of paying state and local taxes will rise for Tennesseans because the sales tax will no longer be deductible, and the lower marginal tax rates for federal individual income taxes mean that the value of deducting other state taxes (property and Hall's income taxes) will be worth less. **Fortune** magazine (October 13, 1986) reported that as a result of federal income tax law changes, state and local taxes would cost a Tennessee family earning $60,000 and itemizing on their federal income taxes approximately $330 more in 1988. Since only about one-fourth of Tennessee taxpayers itemize, many will not be affected by these changes.

Tax reform is also likely to influence people's decisions about when to make consumer purchases. Some automobile and other durable good purchases will probably be made in 1986 in order for buyers to take advantage of sales tax deductions. Automobile purchases already have been stimulated by the low interest rate deals offered by manufacturers. Although tax reform was meant to be revenue-neutral, a small increase in taxes should occur in 1987, and this will reduce disposable income. Thus, some slowdown in the growth rate of consumer purchases will probably occur in 1987 and may be reflected in slower sales tax revenue growth as well as in other areas.

Business investment in new buildings and equipment is likely to be discouraged in the short run because of longer depreciation schedules and elimination of the investment tax credit. Some benefits may result in the sense that some Tennessee cities appear to be overbuilt in office, commercial, and hotel space. Still, during 1987 this will probably slow the construction sector and those other industries which produce investment goods for businesses. Over the longer term, the tax legislation should cause investment resources to be used in a manner that is more economically productive.

Effects of the tax bill on housing are much more difficult to judge. Ownership of rental housing will become less attractive for reasons like the longer depreciation schedules. Such factors can be expected to cause rental rates to rise. On the other hand, lower marginal tax rates reduce the benefits of deducting the interest cost of borrowing money to purchase a home. A judgement of the effects of the tax reform bill on mortgage rates is also necessary to project what will happen to housing demand. Measurement of these forces for 1987 is problematic, but it is reasonable to expect fewer new housing sales next year, particularly in the multi-family category.

In sum, the long-term effects of the tax bill are very difficult to determine. In 1987, however, the effects will probably be negative. Over the longer term, the macroeconomic effects are likely to be modest.

Gramm-Rudman-Hollings Cuts

A second major policy influence could arise from Gramm-Rudman-Hollings-based expenditure cuts. The specific effects are hard to assess, since the provisions requiring mandatory expenditure cuts were declared unconstitutional. Efforts to reduce the federal deficit could continue leading to domestic expenditure cuts, since the President has shown no willingness to reduce the deficit through tax rate increases. Elimination of revenue-sharing for local governments is an example with obvious implications for Tennessee. In addition, Tennessee firms supplying products financed by federal expenditures may be hurt by any reductions.

However, at this time, effects on the deficit arising from Gramm-Rudman initiatives appear to be small for 1987, with the teeth removed from the Gramm-Rudman-Hollings bill. Any reductions in the deficit that do occur will arise more from revenue growth in an expanding economy. Over the long term, reductions in the federal deficit will be beneficial for the economy, but in the short term they will hurt the economy because of reduced federal expenditures for employees and goods.

International Trade

Rising imports without similar growth in exports have been responsible for significantly reducing U.S. economic growth over the past several years as U.S. consumers purchase more foreign-produced goods. The turnaround in the value of the dollar, which began in early 1985, was expected to begin offsetting the international trade deficit by this point in the business cycle. Unfortunately, imports continue to rise, and there has been no significant rebound in exports as yet. The weaker U.S. dollar has failed to induce more consumption of our goods, and foreign countries are content to accept U.S. debt (rather than U.S.-produced goods) to finance the trade deficit. There are a number of reasons why the weakening dollar has failed to narrow the trade deficit, but perhaps the most important is that the dollar has not declined versus all currencies — for example, the Canadian dollar, the Mexican peso, and many of the Pacific country currencies. Thus, the trade deficit with these countries has not been affected by the dollar's slide. Another reason is that the prices of imported goods have failed to rise significantly even where the value of the dollar has declined.

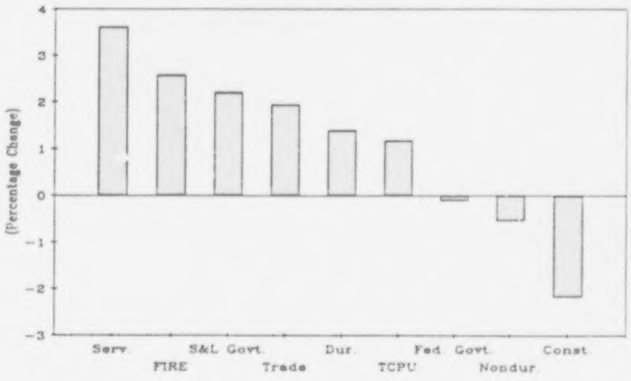
The trade picture hurts the U.S. economy both because U.S. consumers purchase more foreign-produced goods rather than domestically-produced goods, and because the markets for our goods overseas have been weak. Stronger demand for U.S. products in foreign markets, rather than acceptance of more debt, is the key to improved U.S. economic fortunes. Lower U.S. demand for foreign-produced goods would also help. The major hope for greater strength in the 1987 Tennessee economy than is forecast here rests on improvements in the balance of trade. Small signs of export growth have been seen, and the economy could be significantly stronger next year than is currently expected if export growth accelerates.

Tennessee has a greater-than-average percentage of employment linked to manufacturing exports, exceeding all southeastern states except for North Carolina. It is worth noting that one of Tennessee's strengths in export-related industries is in wholesaling of products. Increases in U.S. exports can be expected to have a larger effect on Tennessee, on average, than all other states, although specific effects would depend on the industries where exports were increased.

Tennessee manufacturing employment is also concentrated in industries which are being hurt by rising imports. Examples are found in the apparel and leather goods industries, where foreign-produced goods are supplanting Tennessee-produced goods. A slowing of the employment losses in these industries would add strength to the Tennessee economy. However, it appears that industry declines are the result of long-term trends and are not simply tied to the value of the dollar, so the weakening dollar will not overcome these structural changes in the affected industries.

FIGURE 3

TENNESSEE NONAGRICULTURAL JOB GROWTH, 1986-1987



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Short-term Forecast

In 1985, 26.3 percent of Tennessee's nonagricultural employment was in manufacturing, and 6.3 percent was in wholesale trade, while only 19.8 percent of U.S. employment was in manufacturing and 5.9 percent in wholesale trade. Historically, the Tennessee economy has been more cyclical than the U.S. economy because of the concentration in manufacturing and in wholesaling of agricultural and other products. Although the current business cycle has not seen the Tennessee economy rebound as radically, relative to the U.S. economy, as has been the case in some earlier cycles, Tennessee declined more than the average state during the recession in the early years of the decade and has grown more rapidly in the expansion years of the 1980s (Figure 3). The short-term forecast is consistent with the continuing pattern of this expansion. Economic growth is expected to occur in Tennessee and at a slightly faster rate than for the entire U.S. (Table 2).

The U.S. data reported in Table 2 are drawn from the November 1986 forecast of Wharton Econometric Forecasting Associates (WEFA). These data are reported because CBER believes that the U.S. forecast, prepared by WEFA in September and used as a baseline for the **Economic Report to the Governor**, was overly optimistic. Therefore, the Tennessee forecast was adjusted to reflect more conservative expectations. In the intervening months since the September national forecast was prepared, WEFA has become less optimistic about the U.S. economy in 1987. This attitude is reflected in Table 2, although WEFA's U.S. growth rate projections remain slightly above CBER's expectations for the national economy.

Economic growth is expected to occur over the entire short-term forecasting range (1986.2-1988.3). No recession is reflected in the short-term horizon, although factors such as a smaller-than-expected improvement in the international trade picture or a greater-than-anticipated tax reform-induced effect on investment and construction could precipitate a recession, since economic growth rates in 1987 will be modest. The current economic expansion is already three months beyond the 45-month average expansion of the post-war time period, and movement towards a recession would be consistent with history. The forecast does anticipate a slowdown in employment growth in 1987 relative to the experience of 1986. Still, the 1987 scenario is for nonagricultural jobs to grow at a slightly faster rate than the expected average for the next decade.

Employment

Economic events as described in the previous chapter are expected to slow employment growth, particularly at the beginning of 1987. Growth in nonagricultural jobs should accelerate slightly after the first several quarters of 1987. This will allow the growth rate for 1988 to be higher than for 1987. The economy is forecast to be cycling down-

TABLE 2

QUARTERLY TENNESSEE ECONOMETRIC MODEL
1986 SEPTEMBER QUARTERLY UPDATE

SELECTED U.S. AND TENNESSEE ECONOMIC INDICATORS
SEASONALLY ADJUSTED

	FORECAST - DATA											ANNUAL		
	1986.1	1986.2	1986.3	1986.4	1987.1	1987.2	1987.3	1987.4	1988.1	1988.2	1988.3	1985	1986	1987
US GNP (BIL 82 $)........	3655.9	3661.4	3681.3	3710.5	3739.5	3771.9	3801.4	3828.0	3856.5	3889.7	3925.7	3585.2	3677.8	3786.2
% CHG PREV QTR SAAR........	3.76	0.60	2.41	2.99	3.16	3.71	3.16	2.61	3.01	3.49	3.75	2.71	2.58	2.95
% CHG SAME QTR LAST YR........	3.07	2.63	2.21	2.41	2.29	3.07	3.26	3.17	3.11	3.10	3.29	2.71	2.58	2.95
US PERS CON DEFL (1982=100)........	111.7	111.4	112.2	113.3	114.5	115.8	117.1	118.5	119.9	121.4	[illegible]	[illegible]	[illegible]	[illegible]
% CHG PREV QTR SAAR........	1.06	-1.05	2.85	3.91	4.21	4.56	4.49	4.78	4.11	5.01	5.29	3.87	[illegible]	3.79
% CHG SAME QTR LAST YR........	2.39	1.80	1.78	1.68	2.46	3.88	4.29	4.51	4.66	4.75	4.95	3.87	[illegible]	3.79
TN PERSONAL INCOME (MIL $)........	53908.	54480.	55580.	56452.	57376.	58131.	58950.	59861.	60779.	61897.	63010.	[illegible]	55104.	58579.
% CHG PREV QTR SAAR........	6.50	4.19	8.33	6.42	6.69	5.38	5.75	6.35	6.22	7.56	8.45	[illegible]	5.99	6.31
% CHG SAME QTR LAST YR........	5.56	5.06	6.77	6.37	6.44	6.70	6.06	6.08	5.93	6.53	6.89	[illegible]	5.94	6.31
TN PERSONAL INCOME (MIL 82 $)........	47409.	48000.	48625.	48919.	49011.	49148.	49284.	49479.	49560.	49815.	50161.	[illegible]	48218.	49230.
% CHG PREV QTR SAAR........	5.38	5.08	5.11	2.46	0.75	1.12	1.11	1.60	0.50	2.21	2.81	2.59	[illegible]	2.06
% CHG SAME QTR LAST YR........	2.50	3.09	4.81	4.55	3.38	2.39	1.35	1.14	1.08	1.35	1.78	2.69	[illegible]	2.06
US PERSONAL INCOME (BIL 82 $)........	3019.6	3071.7	3066.2	3096.1	3111.1	3130.1	3149.6	3170.2	3176.5	3190.0	3209.8	[illegible]	[illegible]	[illegible]
% CHG PREV QTR SAAR........	4.89	7.17	-0.71	1.26	2.95	2.17	2.49	2.67	0.29	1.72	2.50	[illegible]	[illegible]	[illegible]
% CHG SAME QTR LAST YR........	2.46	3.71	3.52	1.61	1.12	1.90	2.71	2.57	2.01	1.92	1.92	[illegible]	[illegible]	[illegible]
TN NONAGRIC JOBS (THOUS)........	1915.4	1919.6	1939.9	1946.4	1951.1	1958.8	1965.5	1972.6	1983.6	1993.[illegible]	2003.[illegible]	[illegible]	[illegible]	1962.[illegible]
% CHG PREV QTR SAAR........	6.71	0.86	4.16	1.34	1.38	1.11	1.37	1.61	2.26	1.96	2.11	2.11	[illegible]	1.67
% CHG SAME QTR LAST YR........	4.07	3.73	3.85	3.28	1.97	2.05	1.32	1.36	1.55	1.75	1.95	[illegible]	[illegible]	[illegible]
US NONAGRIC JOBS (MIL)........	99.4	99.8	100.2	100.7	101.3	101.9	102.5	103.0	103.5	104.1	104.6	[illegible]	[illegible]	[illegible]
% CHG PREV QTR SAAR........	2.87	1.62	1.61	2.01	2.40	2.39	2.38	1.97	1.96	2.34	1.93	[illegible]	[illegible]	[illegible]
% CHG SAME QTR LAST YR........	2.90	2.57	2.35	2.01	1.91	2.10	2.30	2.28	2.17	2.18	2.05	[illegible]	2.06	[illegible]
TN UNEMPLOYMENT RATE (%)........	7.8	7.9	7.9	8.0	7.9	8.0	7.9	7.7	7.5	7.6	7.6	8.0	7.9	7.9
US UNEMPLOYMENT RATE (%)........	7.1	7.2	6.9	6.8	6.8	6.7	6.6	6.5	6.4	6.5	6.1	7.2	7.0	6.6
BANK PRIME INTEREST RATE (%)........	9.4	8.6	7.9	7.5	7.8	7.8	8.2	8.5	8.7	8.8	9.1	9.9	[illegible]	8.1
TN MFG JOBS (THOUS)........	487.5	485.3	485.9	486.4	487.2	488.4	488.9	488.6	489.0	489.9	489.6	489.4	[illegible]	488.1
% CHG PREV QTR SAAR........	2.08	-1.79	0.48	0.43	0.69	0.96	0.45	-0.28	0.31	0.73	-0.25	-1.55	-0.60	0.40
% CHG SAME QTR LAST YR........	-1.74	-1.07	-0.02	0.29	-0.05	0.64	0.63	0.45	0.36	0.30	0.33	-1.55	-0.60	0.40
TN MFG AVE WEEKLY HOURS........	41.0	41.0	41.0	41.0	41.0	41.0	41.0	40.9	40.8	40.9	40.9	41.0	[illegible]	41.0
% CHG PREV QTR SAAR........	-2.82	-0.40	-0.13	0.01	0.19	0.10	-0.02	-1.35	-0.43	0.50	-0.10	0.28	-0.01	-0.01
% CHG SAVE QTR LAST YR........	0.92	0.04	-0.16	-0.84	-0.08	0.09	0.12	-0.17	-0.31	-0.28	-0.10	0.28	-0.01	-0.01

SOURCE: QUARTERLY TENNESSEE ECONOMETRIC MODEL, CENTER FOR BUSINESS AND ECONOMIC RESEARCH, UT-KNOXVILLE.

Per-worker wage and salary income is forecast to grow more than 5.0 percent in 1987 and 1988, an increase that is more than double the 1986 growth.

ward by 1988.4 and to approach a recession no later than 1989.

The civilian labor force is forecast to continue growing in 1987, at about the same rate as employment. This will prevent the average unemployment rate from declining relative to the 7.9 percent average rate which is forecast for 1986. Unemployment rates for 1986 and 1987 are only slightly above the full employment unemployment rate for Tennessee, so there is little potential to reduce the rate significantly in the short term. The unemployment rate should fall modestly in 1988 as employment growth rates rise and the labor force grows more slowly. The long-term forecast is for the unemployment rate to become lower as the full employment unemployment rate declines. This long-term decline in the full employment rate will be in response to demographic changes (a maturing labor force) and to lower structural unemployment.

The U.S. unemployment rate will remain below Tennessee's for the next several years. The national forecast for early 1987, as presented in Table 2, appears very optimistic and suggests a widening of the gap between the U.S. and the Tennessee rate. Our feeling is that the difference is a reflection of an overly optimistic U.S. rate and not because any widening of the gap will actually occur. Over the longer term, Tennessee's rate will not fall below that of the U.S. until Tennessee's full employment rate is lower.

Generally, the forecast for nonagricultural job growth by sector, as presented in Figure 3, calls for growth in those industries which have performed well in 1986. The Services and FIRE sectors will have the highest growth rates, and more employees are forecast (on average) for the government sector in 1987, mostly as a result of employment growth which occurred in the middle of 1986.

Some slowdown in the growth of consumer spending is anticipated, and in response, the number of trade jobs will increase more modestly. Nonetheless, the number of trade jobs should increase by nearly 2.0 percent, and this will be above the average for all industries.

Effects of an improving balance of trade are reflected in the durable goods industries' employment. After no growth in employment in 1986, a 1.4 percent increase is forecast for 1987, but growth will probably slow in 1988.

Decline in the nondurable manufacturing industries – leather, chemicals, and apparel – is expected to continue in 1987. One nondurable industry, printing and publishing, will rise again in 1987. Construction employment will also decline in 1987, mostly in response to the effects of tax reform legislation. By the middle of the year, construction employment should begin rising slowly. Federal government employment is expected to be approximately the same in 1986 and 1987.

Gross State Product

Tennessee gross state product (GSP) adjusted for inflation is forecast to grow 3.4 percent in 1986, noticeably above the 2.6 percent GNP growth rate forecast for the U.S. Tennessee is expected to outperform the nation in 1987 as well, when GSP will increase 2.9 percent, and GNP will expand at nearly 2.5 percent. The Services, Trade, and FIRE sectors will increase most rapidly, and manufacturing output will grow by slightly over 2.0 percent. Mining output will decline and construction output will be nearly constant.

Personal Income

Data revisions received since CBER's **Economic Report to the Governor** was begun indicate that personal income growth was actually 6.8 percent in 1985. However, income growth is forecast at approximately 6.0 percent in 1986 but will grow more rapidly in 1987 at 6.3 percent. These statistics hide the effects of inflation. Low inflation in 1986 allowed real personal income to increase the fastest of any of the three years (3.7 percent). Real personal income is expected to rise a somewhat slower 2.1 percent in 1987.

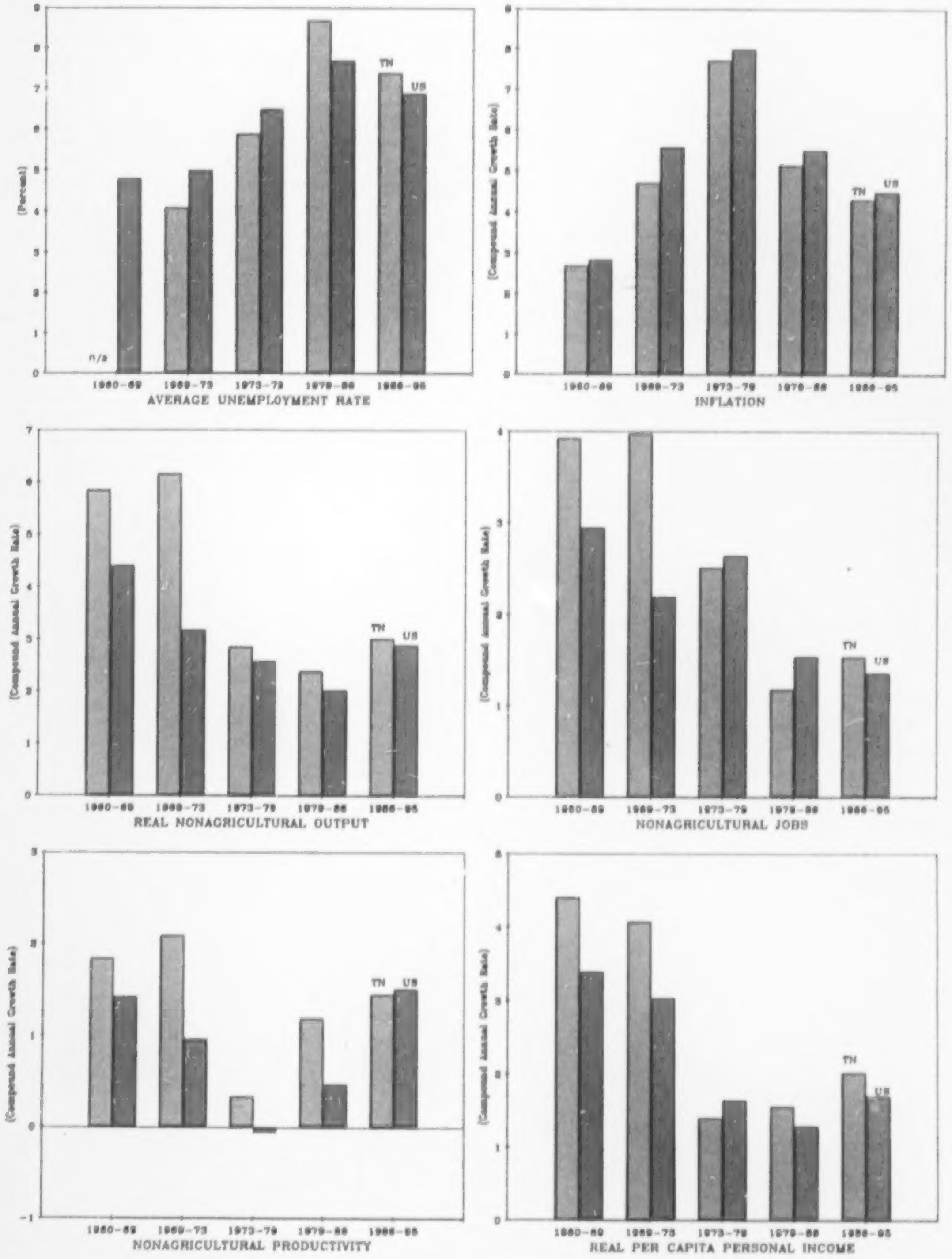
Major categories of personal income include wage and salary income, other labor income, and rents, interest, and dividends. Growth in wage and salary income depends on increases in the number of workers, and increases in wages and salaries per worker. Per-worker wage and salary income is forecast to grow more than 5.0 percent in 1987 and 1988, an increase that is more than double the 1986 growth. Differences in the inflation rate are responsible for acceleration in per-worker wage and salary growth rates. The inflation difference means that total wage and salary income will rise more rapidly in 1987 and 1988, despite slower employment growth.

Other labor income is composed mostly of fringe benefits. Tax advantages have been a strong factor in causing people to seek greater parts of their income in fringe benefits. In addition, there are advantages to purchasing some services, like insurance, through groups, and this practice has also been a motivation for rapid growth in other labor income. The trend for other labor income to rise faster than wage and salary income is forecast to continue, though lower marginal tax rates may lessen the incentive for receiving income through fringe benefits.

Low nominal interest rates and modest growth in corporate profits are causing rent, interest, and dividend income to rise slowly in 1986, but these should accelerate in 1987. If tax reform legislation precipitates significantly

FIGURE 4

THE BEHAVIOR OF ECONOMIC AGGREGATES OVER THE BUSINESS CYCLE AND THE FORECAST PERIOD, TENNESSEE AND U.S.



Tennessee's historical performance in terms of productivity and output growth is largely attributable to a relatively vibrant manufacturing sector which in 1986 comprised 30% of gross state product.

higher rents in 1987, the increase may be even stronger than the forecast.

Sales

Sales growth is forecast to weaken in 1987. Although sales in the current year are expected to be 7.2 percent higher than last year, they will grow only about 5.7 percent in 1987, principally because interest rate breaks offered by automobile manufacturers encouraged many people to make their purchases in the fall of 1986. This undoubtedly "borrowed" sales from next year. Also, pent-up consumer demands have been substantially met, and next year's consumption decisions are expected to be more in line with income growth. This means that consumers are expected to slow their growth in the use of debt.

HISTORICAL TRENDS AND LONG-RUN FORECAST

A positive long-run outlook and sustained growth is forecast for Tennessee through 1995. For only one year – 1989 – is slow growth projected for the state and national economies. The long-run forecast section of this article examines the outlook for individual industries in Tennessee in an attempt to explain the structural forces behind this favorable view.

To understand the current performance of the state economy, as well as its projected performance over the forecast period, it is important first to understand the behavior of the state economy in a historical context. To provide a common frame of reference for the contrast and comparison of past and projected trends in the state economy, the focus of the following analysis will be the business cycle (peak-to-peak) and the long-run forecast period. The analysis begins with a comparison of the overall performance of the state economy relative to the performance of the national economy. The focus in this context will be the behavior of various economic aggregates such as per capita personal income and employment growth. The next section takes a closer look at the performance of various sectors of the state economy (e.g., output and employment growth in the manufacturing sector) relative to both the national economy and the state economy in order to provide a better understanding of overall state performance, as well as indicate which sectors are flourishing and which are declining. Finally, given this historical perspective, the long-run forecast extending to 1995 is presented and discussed.

Overall State Trends and the National Economy

The performance of the state economy relative to that of the national economy, in terms of the behavior of various economic aggregates, is presented in Figure 4. These bar charts reflect the compound annual growth rates for prices (the implicit price deflator), nonagricultural output, nonagricultural employment, average (nonagricultural) labor productivity, and real per capita personal income for both the state and national economy from business cycle (peak) to business cycle (peak). The average annual unemployment rates for the state and national economies are also reported for the same time periods.

These figures reveal a number of trends of interest. Most conspicuous is the decline in output and productivity growth relative to the 1960s period. Yet it is not clear that this period is a good frame of reference for subsequent periods. The substantial output growth rates of the 1960s are attributable to a number of factors, including the war in Vietnam, the "New Economics" of the Kennedy and Johnson administrations, and the Revenue Acts of 1962 and 1964. This interval was also a very lengthy period of uninterrupted growth with no significant downturns in economic activity.

The demand stimulus component of this rapid growth had, by the end of the decade, led monetary authorities to impose tighter controls and fiscal authorities to impose income tax surcharges (to reduce consumer expenditures) in an attempt to avoid what was then severe demand-pull inflation. The consequence of these actions was an economic slowdown.

An attendant cause of the slowdown in output growth is the much discussed productivity slowdown. The historical decline in productivity growth, particularly for the national economy, is indicated in Figure 4. Although productivity is difficult to measure (a most acute problem is measuring the productivity of the public sector) and will not in general incorporate changes in the quality of goods and services produced, most would agree that the trends indicated in the figure are in fact real. Many arguments have been put forth to explain this decline, including a decline in the relative importance of the Manufacturing sector (a sector which had historically been a leader in productivity growth), an increase in the relative importance of the Services sector, and the use of outmoded production techniques within the manufacturing sector.

Tennessee's historical performance in terms of productivity and output growth is largely attributable to a relatively vibrant manufacturing sector which in 1986 comprised 30 percent of gross state product. The forecasted trends in these aggregates, particularly productivity, are attributable to the declining relative importance of the Manufacturing sector and a burgeoning

Services sector. In addition, while Manufacturing sector output growth is forecast to be virtually the same for Tennessee and the U.S., manufacturing employment growth is projected to decline for the U.S. economy over the 1986-1995 period. These factors, in addition to a faster statewide growth pattern for the Services sector, will lead to lower statewide productivity growth rates relative to the national economy.

As can be seen from Figure 4, the 1970s were a period of relatively high inflation and unemployment. (In general, the statewide inflation rate has fallen behind the price increase rate for the U.S. economy.) These inflation rates were attributable to a number of factors, including oil price shocks and wage increases that outstripped productivity increases. Although these cost-push factors induced President Nixon to impose wage and price controls in the early 1970s in an attempt to hold down the rate of price increases, this action was insufficient to break inflationary expectations. The combination of inflationary expectations, price shocks, and money supply growth over the period of the 1970s and early 1980s led to chronic inflation.

From Figure 4 it is possible to identify three other important historical trends in the behavior of the state and national economies. The first is a decline in the employment growth rate, which is largely attributable to demographic changes, the most important being the end of the baby-boom era. The second is the historical trend in unemployment, attributable (at least at the state level and most likely at the national level) to increases in the structural and frictional rates of unemployment, induced in part by the declining relative importance of the manufacturing sector. Finally, a decline in the rate of growth of real per capita personal income may be attributed to a number of factors, including increases in social security contributions, wage controls in the early 1970s, and rapid inflation throughout the 1970s which offset substantial nominal income gains.

In general, the state of Tennessee has fared well relative to the national economy with respect to the behavior of all these aggregates, with a considerable portion of this positive performance due to a dominant Manufacturing sector. Although the Manufacturing sector will decline in relative importance in the future, these general trends in the state economy are forecasted to continue. An exception is the unemployment rate, which is projected to exceed the national unemployment rate. The reasons for this lie in WEFA's overly optimistic forecast for the national economy as well as continued high rates of structural unemployment within the state of Tennessee.

Sectoral Performance of the State Economy

The results and discussion above on the performance of the state economy mask considerable variation in sectoral performance within the state. To understand these sectoral trends better and put overall state performance in the proper perspective, Table 3 contains compound annual growth rates for output by sector for both the Tennessee

TABLE 3

COMPOUND ANNUAL GROWTH RATES OF REAL OUTPUT BY SECTOR FOR TENNESSEE AND THE U.S. OVER THE BUSINESS CYCLE AND FORECAST PERIOD

	Business Cycle Peak to Peak				
Overall Growth	**1960-1969**	**1969-1973**	**1973-1979**	**1979-1986**	**1986-1995**
Tennessee	5.58	6.02	2.84	2.40	3.00
United States	4.26	3.16	2.55	2.05	2.92
Sectoral Growth					
Manufacturing					
Tennessee	8.80	8.19	2.51	2.88	2.89
United States	5.25	3.73	1.94	1.79	2.91
Durables					
Tennessee	9.74	7.99	2.28	5.03	3.13
United States	5.73	3.07	1.96	1.81	2.88
Nondurables					
Tennessee	8.05	8.36	2.71	0.89	2.62
United States	4.50	4.79	1.90	1.76	2.95
Mining					
Tennessee	3.88	5.19	-1.48	-1.17	-1.07
United States	3.55	0.86	-0.43	-0.05	-0.42
Construction					
Tennessee	2.97	0.37	0.25	-0.88	2.18
United States	1.32	-1.85	0.31	-0.17	2.13
Finance, Insurance, Real Estate					
Tennessee	4.43	6.77	3.20	1.15	2.98
United States	4.77	4.02	3.77	2.41	2.88
Trade					
Tennessee	5.28	6.97	2.99	3.16	3.75
United States	4.41	4.84	2.67	2.95	3.71
Transportation, Communications, and Public Utilities					
Tennessee	5.48	7.19	4.73	2.72	3.49
United States	5.11	4.96	3.19	1.88	3.17
Government					
Tennessee	5.37	2.64	3.23	0.58	1.50
United States	3.94	0.24	1.53	1.17	2.02
Agriculture					
Tennessee	-2.02	-0.58	1.21	2.32	1.28
United States	-0.50	1.87	1.33	2.45	3.15
Services					
Tennessee	4.63	5.75	3.75	4.29	3.82
United States	4.71	4.28	3.97	3.67	3.36

Source: Annual Tennessee Econometric Model, Historical Data and October 1986 Control Solution.

economy and the national economy. This examination allows for a comparison of the growth of various sectors of the state economy relative to overall growth for the state economy, overall growth for the national economy, and the growth of relevant sectors of the national economy.

From a historical perspective, the most rapidly growing sectors of the state economy in terms of output have been the Services, Trade, Transportation, Communications, and Public Utilities (TCPU), and Durables Manufacturing sectors. For all these sectors, growth rates have closely followed or exceeded the statewide and national average growth rates, as well as the relevant U.S. sectoral growth rates. In general, these trends are expected to continue over the long-run forecast period. While the growth of the Construction sector is projected to approach the statewide growth rate over the long-run forecast period, Mining sector output growth is projected to be negative.

The historical pattern of employment growth indicates a declining trend relative to the 1960s period, due in part to the end of the baby-boom era. Also, important sectoral trends in employment growth reflect changing production techniques (and thus capital-labor intensities), foreign competition, and other structural factors. Since 1969, employment growth over the business cycle, while being quite respectable, has been poor relative to the earliest business cycle. Most of the growth has taken place in Trade, Services, and Finance, Insurance, and Real Estate (FIRE), indicating a significant shift in the composition of employment within the state.

These differential rates of growth for output and employment have been accompanied by differential rates of growth for real wages and salaries within sectors of the state economy. The growth of compensation in the Mining, FIRE, TCPU, and Agricultural sectors has exceeded the overall rate of growth of average compensation over all business cycles considered and is expected to continue over the long-run forecast period. The trend in compensation growth for the Manufacturing sector has been quite stable relative to other individual sectors, as well as all sectors combined, possibly reflecting the direct and indirect influence of collective bargaining in this sector. The direct union influence is realized in multi-year contractual agreements over wage scales, and indirect effects may be realized in the spillover of wage scales to nonunion manufacturing firms.

Growth rates in wages and salaries in the Services and Trade sectors is quite poor relative to the performance of other sectors in 1960, 1986, and 1995. Due to the growing size of these two sectors, this poor showing has had an adverse impact on the statewide average. The TCPU sector has been, and is projected to remain, the sectoral leader in the level of wages and salaries provided to labor. Due to the small size of this sector relative to the entire state, the activity will have little impact on overall state performance.

In sectoral productivity, Manufacturing—both durables and nondurables—has exhibited a fairly stable pattern of productivity growth over all periods, thus buoying overall state productivity growth. The Construction, Services, and Government sectors (and to a lesser extent the Trade sector) have imposed a drag on overall state productivity growth, and the behavior of the Mining sector has been extremely erratic (5.04 from 1969-1973, and -5.32 from 1973-1979).

LONG-RUN FORECAST

The long-run forecast for Tennessee signals improved overall growth and an optimistic outlook for the state. One shallow downturn in activity, occurring in 1989, is evident from the forecast statistics for the period 1986-1995.

Real gross state product will grow at a compound average annual rate of 3.0 percent over the forecast horizon. This rate compares favorably with the United States' real gross national product growth of 2.92 percent, and both growth rates represent a significant improvement over the 1979-1986 period, in which Tennessee real compound growth averaged 2.40 percent annually, while United States' real growth was a meager 2.05 percent per year.

Real Personal Income and Employment

Real personal income is expected to experience slightly slower growth in both the United States and Tennessee, at 2.94 and 2.70 percent, respectively. The gap between output and personal income growth will be made up by higher growth in depreciation, transfer payments, corporate profits, and dividend and interest income.

Less impressive will be employment growth, for which the forecast predicts a compound average annual growth rate of 1.40 percent. However, U.S. employment will grow more slowly, at 1.35 percent annually. Although both these rates are significantly below the growth incidence of the 1960s and 1970s, they largely reflect decreases in labor-force growth rather than increasing unemployment. For example, the baby-boom generation has stopped flooding the labor market, and there is a slowing of the previously large numbers of women entering the labor force.

Worker Productivity

Coupling relatively slow employment growth with recovered output growth implies increased worker productivity in the coming years. In this regard, the state is participating in a national trend, although Tennessee's historical superiority in productivity growth appears to be diminishing. Real output per employee will remain constant in Tennessee during the recession year of 1989 but will rebound sharply, registering a 3.45 percent increase in 1990. The average annual compound growth rate of real output per employee will be 1.80 percent over the last six years of the forecast period. In contrast, the United States' growth rate will be 0.7 percent in 1989 and 1.77 percent over the 1989-1995 period.

Unemployment

Slowing employment and laborforce growth translate into continuing unemployment in the 6.6 to 7.6 percent range for the United States. Tennessee will continue to be burdened with a slightly higher unemployment rate, around 7.0 to 8.2 percent over the forecast horizon. However, the unemployment gap between Tennessee and the United States is predicted to close, with Tennessee's unemployment rate dropping below the U.S. unemployment rate in 1994 for the first time since 1978. These relatively high (by historical standards) unemployment rates are mostly the result of structural changes in the economy which have caused the full employment unemployment rate to increase. A monograph addressing this issue was published in August 1985 by the Center for Business and Economic Research. **The Full Employment Unemployment Rate: Changes in Tennessee, The South, and The U.S., 1961-1983** concludes that the full employment unemployment rate for Tennessee has risen from 4.6 percent in 1961 to 7.6 percent in 1983. Thus, the first four years of the long-run forecast simply reflect the structural changes discussed in the study. The 1990-1995 period will witness decreases in the unemployment rate as these structural changes begin to reverse themselves. Helping to decrease the unemployment rate will be the demographic changes mentioned above. In addition, structural unemployment in the manufacturing industries should decrease as these industries adjust to their new position in the world economy. A decrease in the full employment unemployment rate is anticipated by the end of the decade.

Inflation

Inflation is expected to continue at an acceptable, albeit accelerated pace. The implicit price deflator for gross state product will average 4.33 percent annual compound growth from 1986 through 1995. This is slightly below the U.S. rate of 4.51 percent, and substantially below the 8 and 9 percent rates of the 1979-1981 period.

Wharton Econometrics predicts that inflation at the national level will rise to 5.29 percent in 1989 in response to capacity constraints on the economy. This increase will prompt the Federal Reserve to pursue a tighter monetary policy, thus raising interest rates and contributing to a minor downturn in 1989. The Tennessee economy will mirror this performance by registering a lethargic 0.38 percent growth rate for 1989. However, the state will rebound strongly, reflecting Tennessee's heavy concentration in cyclically-sensitive industries.

Nonagricultural Employment

In 1985, 26.3 percent of Tennessee nonagricultural employment was in the Manufacturing sector, compared with a 19.9 percent ratio for the United States overall. Together, services and trade accounted for 42.8 and 46.1 percent of employment in Tennessee and the United States, respectively. Since manufacturing normally suffers disproportionately during a recession, Tennessee usually experiences a larger downturn than the United States. However, in the past, manufacturing has recoiled vigorously, so that Tennessee typically grows faster than the U.S. after a recession. These swings represent cyclical activity in Tennessee, not long-run trends.

Real Output

Tennessee's average annual compound growth rate of real output exceeded the U.S. growth rate during the expansion periods of 1961-1969, 1971-1973, and 1975-1979. Nonagricultural employment growth rates also exceeded U.S. averages during these expansions. This pattern is forecast to be repeated during the current recovery, 1983-1988, and the recovery phase of the forecast period, 1990-1995. Real output in Tennessee will grow at an average annual compound rate of 4.11 and 3.17 percent during these periods, while United States' real output growth will average 3.65 and 2.8 percent. Similarly, Tennessee nonagricultural employment growth will be 3.05 and 1.68 percent, compared with 2.88 and 1.17 percent for the United States.

Manufacturing

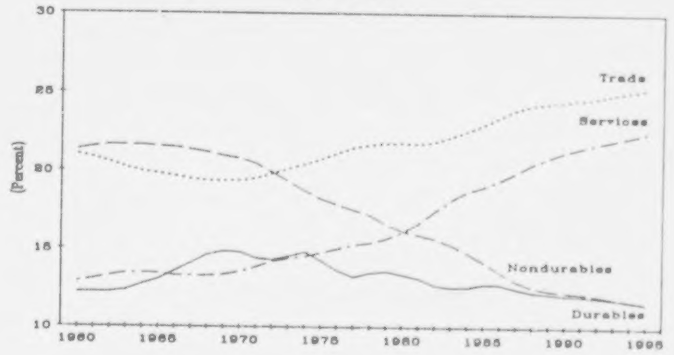
Lackluster growth in manufacturing will change the cyclical pattern in the future, but Services, Trade, Transportation, and Finance, Insurance, and Real Estate (FIRE) growth will offset manufacturing losses. Tennessee's economy will emerge from these changes less cyclically-sensitive and stronger in the growth industries of the future.

It is increasingly difficult for many United States' manufacturing industries to compete with lower-cost labor and newer plants overseas, particularly with the dollar as strong as it has been recently. A continued weakening of the dollar should ameliorate this situation somewhat. Still, Tennessee must adjust to this changing climate to maintain a healthy economy, and statistics seem to indicate that this change is taking place in Tennessee, where manufacturing accounted for 34 percent of employment in 1960. This figure dropped to 26.3 percent in 1985 and is predicted to decline even further — to 22.9 percent of employment in 1995. However, the gap between Tennessee and the United States is not closing: Tennessee's percent of manufacturing employment exceeded that of the United States by 3.0 percentage points in 1960 and by 1985 increased to 6.4 percentage points. No reduction is forecast, as the gap will remain fairly constant at 6.3 percentage points in 1995.

The boon that manufacturing has provided to Tennessee's economy during past recoveries is diminishing. The difference in Tennessee's and the United States' growth rates decreases steadily from 4.2 percentage points during the 1971-1973 recovery to 0.37 percentage points during the 1990-1995 recovery. Similarly, differences in nonagricultural employment growth fall from 2.39 percentage points in the 1971-1973 recovery period to 0.51 percentage points in the 1990-1995 period. Manufacturing employment is forecast to exhibit an average annual compound growth rate of only 0.49 percent, in contrast to the overall Tennessee growth rate of 1.4 percent during the 1986-1995 period. This

FIGURE 5

PERCENT OF TENNESSEE JOBS IN DURABLES, NONDURABLES, SERVICES AND TRADE, 1960-1995



deficit will be ameliorated by growth rates of 2.12 and 3.00 percent in the trade and services sectors, respectively, illustrating that the shift away from manufacturing is occurring later in Tennessee than in the U.S. There is some evidence that Tennessee is catching up, however. Since 1979, services output in Tennessee has grown more rapidly than in the United States.

Nondurables

The decline in manufacturing is not homogeneous. Nondurable goods manufacturing will be hit much harder than durable goods manufacturing. Durables show an annual employment growth rate of 0.72 percent over the forecast horizon, while nondurable manufacturing employment is expected to increase only 0.27 percent per year. The shift away from nondurables is part of a long-run national trend. Figure 5 illustrates the percent of total Tennessee employment in the Durables, Nondurables, Trade, and Services sectors from 1960 through the forecast year 1995. Graphed in Figure 5 are three-year moving averages of these employment ratios, which smooth out year-to-year changes and make long-run trends more apparent. The steady long-run decline in nondurables employment is clearly indicated, along with steady gains in the services and trade sectors. Durable manufacturing employment shows no significant trend. The consummation of these shifts will be a positive force in Tennessee's future. The drag created by structural change will be smaller in the future, so that the trend-growth industries will exert more influence on the state's economic health.

It is also revealing to note that real output for all manufacturing will grow at an average annual compound rate of 2.89 percent from 1986 to 1995. The breakdown into durables and nondurables is 3.13 and 2.62 percent, respectively. Compared with an overall growth rate for the state of 3.0 percent, manufacturing (particularly durables) appears to be a healthy sector of the economy. The discrepancy between employment and output growth is due to increasing capital intensity in these industries. Manufacturing firms are substituting machinery for relatively expensive labor. Hence, manufacturing will continue to contribute significantly to Tennessee's gross state product (particularly when the large size of this sector is accounted for) but will not be a source of substantial employment growth.

The poor performance of the nondurables sector is predominantly due to lethargy in the textiles, apparel, leather, and chemicals industries. These industries will register absolute decreases in employment from 1986 to 1995. Once again, output will increase in these industries as Tennessee and the United States lose jobs to increasing mechanization and foreign competition.

Another significant structural problem faced by the Tennessee economy is the loss of federal government jobs. Federal employment declined every year from 1981 through 1984, and no substantial increase is expected in federal employment through 1995.

Effects of Tax Reform Bill

Finally, the effects of the Tax Reform bill of 1986 on aggregate economic behavior remain unknown. At this time, only speculation is available. However, Wharton Econometrics anticipates potential reductions in business investment as a result of the tax bill, which may decrease long-run growth. The inability to deduct sales taxes, while state income tax deductions are maintained, is certain to hurt Tennessee taxpayers. The annual Business Attitude Survey conducted by the Center for Business and Economic Research should help answer some questions regarding the impact of tax reform on the Tennessee economy. The results of this survey, in which business executives across the state are interviewed, appear in this issue of the **Survey of Business**.

Summary

In the long run, the Tennessee economy should overcome these obstacles as the current and past structural changes work themselves out. The services and trade sectors will be the bright spots in both the Tennessee and national economies. Aggregate long-run growth rates in output and employment, as reflected by the forecast, indicate that the strengths will outweigh the weaknesses. Tennessee can look forward to a decade of reasonably strong growth, with only one minor downturn in 1989. ☐

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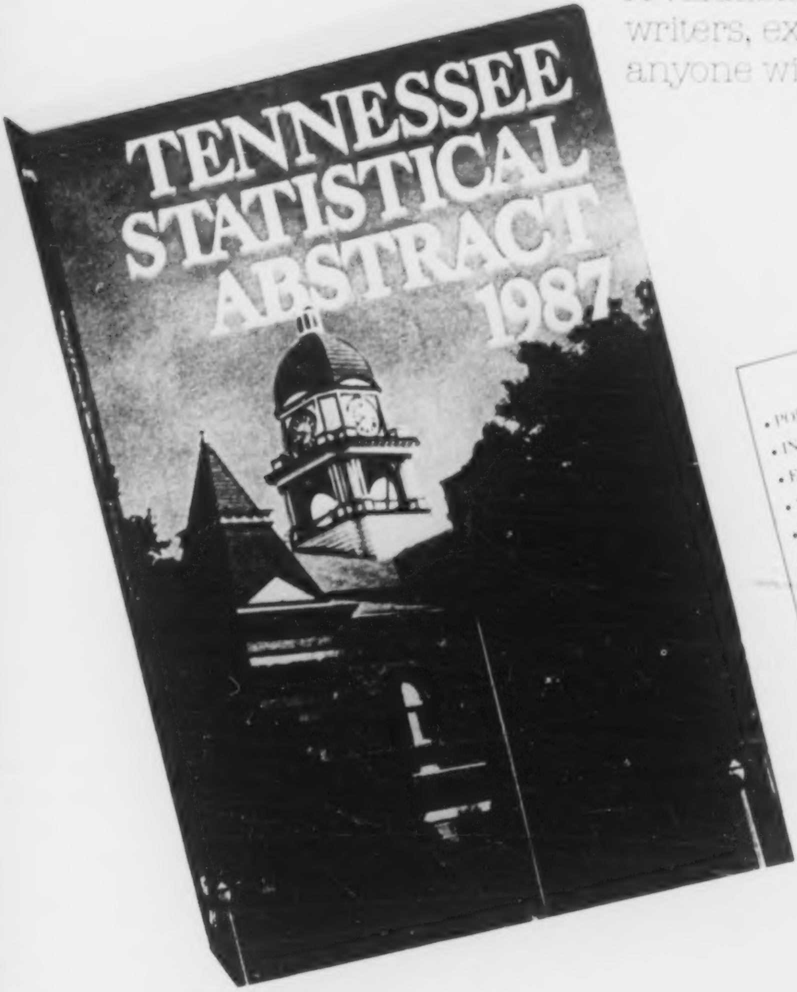

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- POPULATION
- INCOME AND PRICES
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REAL ESTATE AND URBAN DEVELOPMENT: NEW TAX LAWS, NEW PROSPECTS

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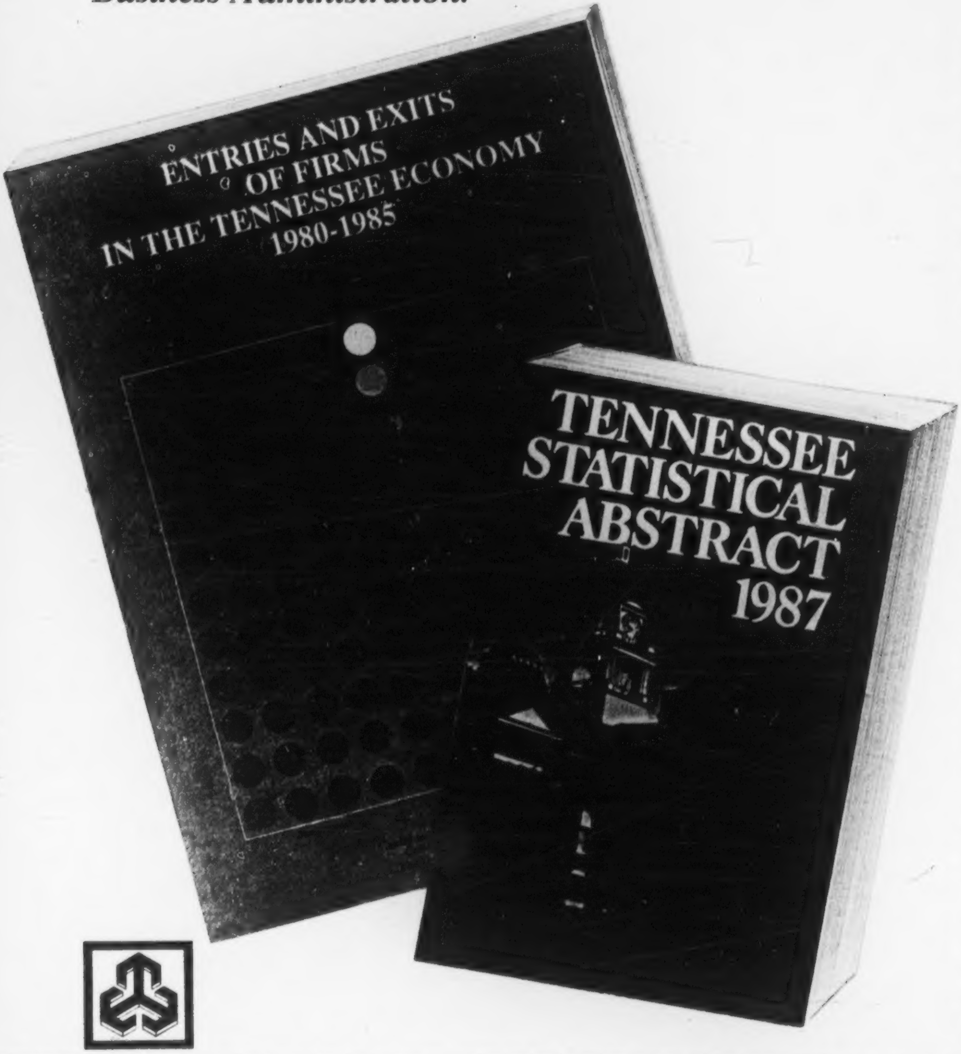
ENTRIES AND EXITS OF FIRMS IN THE TENNESSEE ECONOMY 1980-1985
TENNESSEE STATISTICAL ABSTRACT 1987

Our most recent monograph (May 1987), ENTRIES AND EXITS OF FIRMS IN THE TENNESSEE ECONOMY, 1980–1985, is the study of the entries and exits of firms which have located in the state, including industries in which the firms are located, the geographic areas where exits and entries have occurred, and the sizes of firms involved. This detailed study of the Tennessee economy, with accompanying tables, is the first of several analyses being undertaken by CBER and the Tennessee Department of Employment Security.

Also available from CBER is the TENNESSEE STATISTICAL ABSTRACT, a standard annual reference for economic and social data in the state. The TSA presents the most current historical information available for the state as a whole, for Tennessee's seven Metropolitan Statistical Areas, the 95 counties, and cities and towns, as well as the 11 other southeastern states.

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CONSULTING EDITOR'S COMMENTS

During the 1970s and early 1980s the real estate industry has been subjected to dramatic and somewhat traumatic alterations. Fundamental changes in both the primary and secondary mortgage markets, the tax incentives for real estate investment, and the overall health of the American economy have left practitioners, policy-makers, and analysts uncertain as to the future of real estate and urban development.

Specifically, in order for savings and loans to effectively manage their portfolios in an era of high and very volatile interest rates, we have witnessed substantial deregulation in this industry. These institutions are currently required to hold a much smaller proportion of their assets as mortgages. If this trend continues, it is feared that in the absence of the regulations and tax incentives which formerly directed the flow of capital into the primary mortgage market, the cost of mortgage funds could increase substantially. One possible way to forestall this outcome would be to improve the efficiency of the secondary mortgage market and encourage the development of innovative investment alternatives in an attempt to generate sufficient indirect demand for primary market loans to keep funds available at a reasonable cost.

Tax laws have also undergone a substantial transition over the last few years. In particular, the Economic Tax Recovery Act of 1981 greatly enhanced the tax benefits associated with real estate investment by encouraging economic growth and development. However, most recently the scales have been tipped in the opposite direction by the Tax Reform Act of 1986. In a move to establish a tax system that is generally more equitable, this legislation has done away with most of the incentives for real estate investment implemented over five years earlier.

Overlaying these real estate specific changes is the more general structural transition being undergone by the U.S. economy. It has become clear that our worldwide comparative advantage in heavy industrial production and the subsequent economic development experienced in this country in the 20th Century is at an end. Heavy industry has given way to a service-oriented information – intensive industrial development. Real estate markets historically have been very sensitive to both business cycles and long-term growth trends in our economy. Certainly, as the nature of our economy changes, we might expect a corresponding transformation of urban form and types of real estate investment.

Given all of these factors, it would seem to be an appropriate time to examine the future prospects for real estate and urban development. In this context, experts in the areas of real estate finance, real estate investment, housing markets, and urban and regional economics were invited to share for this issue of the **Survey** their views about the nature of these changes and the prospects for the future.

The first article, by Donald J. Bisenius and Jane W. Katz, deals with the most recent development in the secondary mortgage market, the Real Estate Mortgage Investment Conduit (REMIC), the latest addition to a variety of mortgage-backed securities that have proven to be very attractive to investors. Development of the REMIC was made possible by the Tax Reform Act of 1986. The authors provide a clear explanation of the advantages of REMICs in the context of a historical discussion of the development of mortgage-backed securities and speculate on the future impact of REMICs in the primary mortgage market.

The second article, by William C. Goolsby, focuses on the dramatic changes in the tax treatment of real estate brought about by the Tax Reform Act of 1986. The author points out the positive and negative effects that changes in the tax law will have on the various forms of real estate investment. In addition, he discusses the quandary faced by any nation trying to modify its tax system.

The third article, by Frederick E. Flick, provides an overview of recent financial and tax reforms from the perspective of an analyst primarily concerned with the condition of the residential housing market. The conclusions that are drawn from residential real estate are relatively bright. While the author feels that the Tax Reform Act of 1986 may dampen housing activity slightly, he suggests that financial reforms and other economic factors should offset any negative tax effects. In addition, he suggests that new applications of computer and information technology most probably will continue to improve the productivity of the residential real estate brokerage industry.

The fourth article, by Charles L. Leven, provides us with insights into the changing nature of urban areas. Specifically, Dr. Leven illustrates the general kinds of changes taking place throughout the United States by considering the "urbanization" of the Tennessee economy. He explains that our most rapidly developing urban areas have most recently been, and should continue to be, outlying (ex-urban) areas surrounding small and medium-sized cities. This shift in urbanization and development away from areas directly adjacent to major metropolitan centers has been fostered by the rapid development of service-orientated industries, and the accompanying revolution in data processing and telecommunications technology.

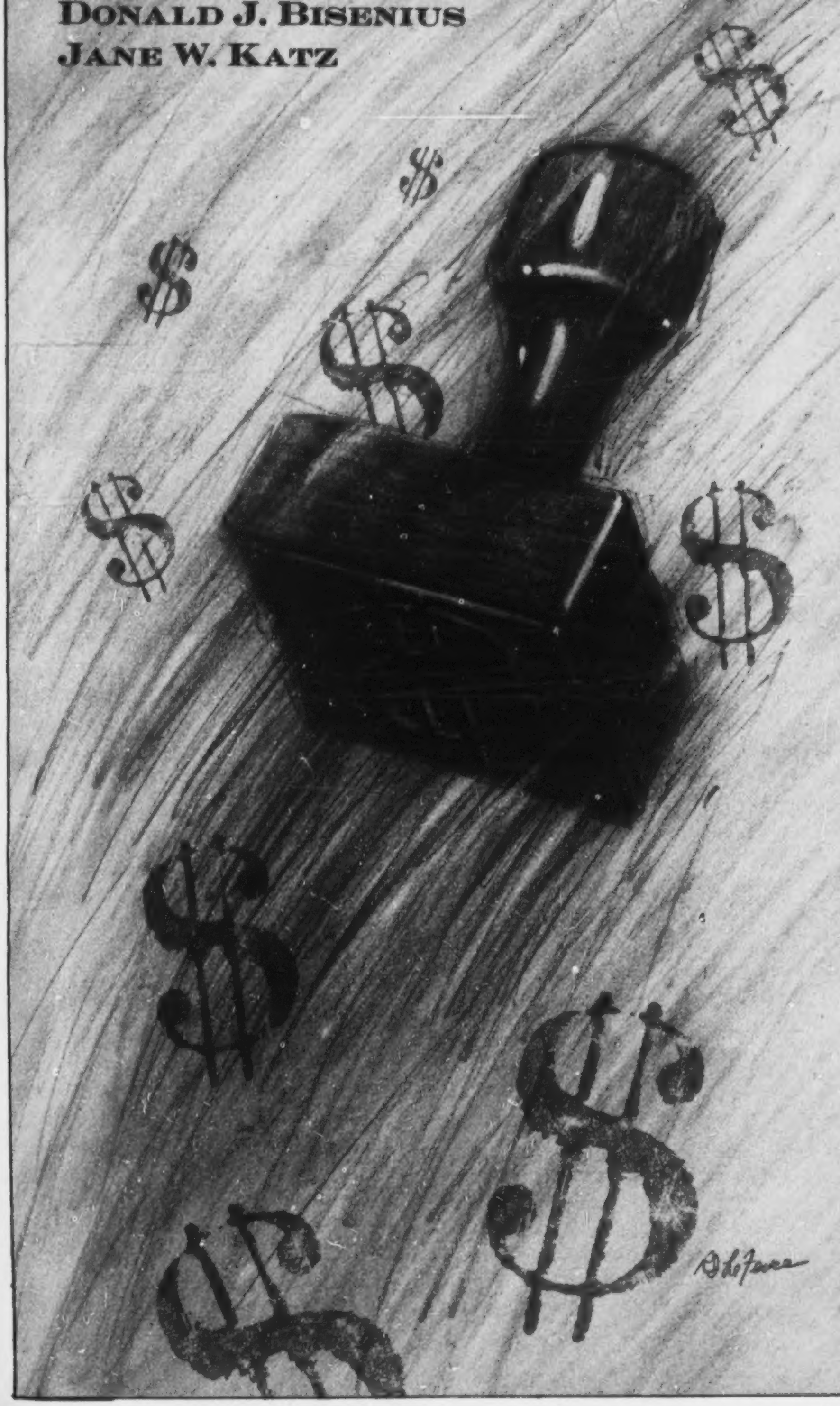
The final article, by David M. Mandy, while not directly related to the real estate theme of this issue, is particularly important because it focuses on the crucial question of tax reform in Tennessee. Dr. Mandy points out that Tennessee will experience a substantial loss as a direct result of the Tax Reform Act of 1986 through elimination of the sales tax deduction for federal income tax purposes. However, state income taxes remain deductible. Thus, currently a state income tax could be implemented at minimal cost to Tennesseans. In addition, if carefully designed, this system could provide a more progressive and therefore more equitable tax structure within the state. Perhaps its time has finally come.

Thomas P. Boehm,
Consulting Editor

REMICs:

THE NEXT STEP IN MORTGAGE-BASED SECURITIES

DONALD J. BISENIUS
JANE W. KATZ



The mortgage-backed securities market has witnessed substantial product innovation during the last few years. One of the provisions of the Tax Reform Act of 1986 allows the creation of Real Estate Mortgage Investment Conduits (REMICs), tax-free entities (trust, partnership, or corporation) that hold mortgages secured by any type of real property and issue multiple classes of ownership interests in those mortgages to investors. As of January 1, 1987, the creation of REMICs removed many of the current tax provisions that dictated the particular structure of multiple-class mortgage-backed securities (MBSs). The REMIC legislation specifically addresses only the tax rules for multiple-class MBSs. This legislation does not by itself alter the accounting treatment of a mortgage-backed security transaction, although it may allow transactions to be structured in such a way as to gain more favorable accounting treatment. By eliminating some particular tax considerations, this legislation should allow a more efficient structuring of mortgage-backed securities.

Part of the product-development process in recent years can likely be attributed to the relative newness of the securities market. Much of this proliferation of new product designs, however, is a direct result of the market participants' attempting to overcome the inefficiencies generated by tax and accounting considerations.

History of the Secondary Mortgage Market

Historically, the originators of home mortgages have included thrifts, savings banks, commercial banks, and mortgage bankers. While thrifts, the largest originators of one- to four-family mortgages, primarily held these mortgages in their portfolios, mortgage bankers generally sold their mortgages to thrifts, depository institutions, or other investors. The sale of these loans helped these mortgage originators obtain additional funds for continued operations. While there existed a limited secondary market for mortgages, it was not until Congress acted in the late 1960s that the secondary market became better developed and more structured.

Congress enhanced the efficiency of the secondary market for residential mortgages with the creation of a number of secondary mortgage market facilities, e.g., the Government National Mortgage Association (GNMA), the Federal National Mortgage Association (Fannie Mae), and the Federal Home Loan Mortgage Corporation (Freddie Mac). GNMA, created in 1968, provided a secondary market for certain mortgage loans by guaranteeing the timeliness of the payments on pass-through securities backed by pools of Federal Housing Administration-insured (FHA) or Veterans Administration-guaranteed (VA) mortgages. Fannie Mae was created in 1938 as a wholly-owned government corporation and rechartered in 1968 as a federally-sponsored agency. Its role is to provide additional liquidity to the mortgage market and improve the distribution of investment capital for the financing of the construction and sale of housing. Freddie Mac, created in 1970, was intended to enhance the liquidity of mortgage investments and to increase the availability of funds for mortgage lending by developing and maintaining a secondary market for conventional mortgage loans.

Thrift institutions have historically held large volumes of whole mortgage loans in their portfolios. As such, the need for a well developed secondary market was not readily apparent. The unprecedented rise in interest rates beginning in the late 1970s, however, demonstrated that the traditional thrift approach of funding long-term fixed-rate mortgages with short-term liabilities could be disastrous. The rise in interest rates, combined with the extensive mismatch between the maturities of the industry's assets and liabilities, resulted in severe losses for most thrifts.

In response to these losses, Congressional action in 1980 and 1982 attempted to remove many of the portfolio constraints on thrift institutions. Both the Depository Institutions Deregulation and Monetary Control Act of 1980 and the Garn-St Germain Depository Institutions Act of 1982 reduced restrictions on the rates thrifts could pay on their liabilities and provided authorization for thrifts to expand their lending into nontraditional areas, including commercial loans and consumer lending. While thrifts continued to play an important role in the origination and funding of home mortgages, many thrifts sought to turn their large holdings of mortgages into more liquid assets. Thus, the need for an expanded secondary market became more apparent.

During this same time period, certain innovations in the secondary market were taking place. Freddie Mac implemented its Guarantor program in August 1981. Under this program Freddie Mac purchases mortgages at par and simultaneously sells back to the originator an interest in the mortgages in the form of participation certificates (PCs). The guarantor program allows a mortgage-investing thrift to convert an illiquid whole loan to a very liquid federally guaranteed mortgage-backed security that can be pledged as collateral for borrowings or sold on more advantageous terms than the whole loans.

At the end of 1981, Fannie Mae instituted its first mortgage-backed securities (MBS) program, enabling savings and loans to swap their mortgages for FNMA-guaranteed MBSs. This program also allowed thrifts to convert illiquid whole mortgages into liquid securities.

While these programs were beneficial to the development of the market, the 1982 **Report of the President's Commission on Housing** further clarified the need to develop an expanded role for a private secondary market. In particular, the Commission stated that

> ...mortgage-related securities issued for sale in the secondary market are disadvantaged from a legal, regulatory and tax standpoint in their competition with corporate debt obligations, unless the securities are covered by the guarantee of a federal or federally related agency. These disadvantages could become increasingly important impediments to the free flow of mortgage credit through the Nation's capital markets, particularly if thrift institutions become less important as mortgage investors and Federal participation in the Nation's credit markets is reduced as a matter of public policy.

The report recommended that the Internal Revenue Code be amended to remove some of the tax, legal, and regulatory impediments necessary to enhance the attractiveness of conventional mortgage-backed securities.

Fundamentals of the Market

Traditional mortgage-backed securities can be divided into two broad categories: mortgage *pass-through* securities and mortgage-backed *pay-through* bonds. Investors in a mortgage *pass-through* security own an undivided interest in the pool of mortgages that underlie the security. Thus, pass-through security holders own the mortgages themselves. This is in contrast to *pay-through* bond investors who own bonds that are collateralized by a pool of mortgages or by a portfolio of pass-through securities. These bonds are serviced with the cash flows from the mortgage collateral, but the bonds currently represent an obligation of the issuing entity and not an ownership interest in the mortgages.

> THE WAY FOR AN INSTITUTION TO AVOID INFLATION OF ITS BALANCE SHEET IS TO ESTABLISH A TRUST TO ISSUE THE CMO, AND THEN SELL OVER 50 PERCENT OF THE OWNERSHIP INTERESTS IN THE TRUST.

Traditional single-class mortgage-backed securities (both pass-throughs and pay-through bonds) remit to investors their pro-rata share of the monthly payments on the underlying mortgages. Since most residential mortgages allow the borrower to prepay the loan at par whenever he chooses, investors in traditional single-class MBSs face irregular and uncertain cash flows. For example, if a decline in interest rates stimulates an increase in mortgage refinancings, the increase in mortgage prepayments is passed on to all MBS holders on a pro-rata basis. The prepayment option on the part of the homeowner (technically a long-call option) increases the variability of the security holders' receipts (the securities technically have an embedded short-call option) and thereby reduces the attractiveness of these securities relative to instruments that do not have this embedded option. Furthermore, since these traditional single-class MBSs distribute cash flows on a pro-rata basis, investors are limited to a security whose maturity equals that of the underlying pool of mortgages.

CMOs

The development of collateralized mortgage obligations (CMOs) by Freddie Mac in June 1983 eliminated many of these problems. A CMO is a pay-through bond that segments and prioritizes cash flows from the underlying mortgage collateral. The variability and unpredictability of the mortgage cash flow remains: borrowers can still prepay their mortgages – but, since the CMO substitutes a sequential distribution process for the traditional MBSs' pro-rata distribution of these cash flows, the stream of payments received by the holders of various CMO classes, or tranches, as they are called, differ dramatically from one another. Thus, by creating bonds with short-, intermediate-, and long-term maturities, a CMO appeals to a wider range of investors than the traditional long-term, one-class, mortgage-backed security does. The CMO market is estimated at over $83 billion by year-end 1986.

The development of a multiple-class pay-through bond was not paralleled by the development of a multiple-class pass-through security. As is discussed below, much of the impetus for the development of the CMO directly resulted from certain negative tax implications of issuing a multiple-class pass-through security.

For tax purposes, the selling of interests in a fixed pool of assets, such as a single-class pass-through security, had been considered a trust arrangement. As such, income from the assets was taxed only at the security-holder level. No taxes were levied at the entity level prior to the distribution of the cash flows from the assets. To obtain this favorable tax treatment, the pool of assets needed to be fixed at the outset, the arrangement needed to be self-liquidating, and the transaction could not be subject to active management.

In February 1984, Sears Mortgage Corporation, in affiliation with Dean Witter Reynolds Inc., issued $500 million of multiple-class pass-through securities. After the successful sale of these securities, preparations began for a second $500 million issuance. Just prior to pricing, however, the Treasury Department issued a proposed regulation – known as the "Sears" Regulation – that would deny trust tax-status to multiple-class pass-through securities. The argument was that such securities required active management and therefore did not qualify for special tax status. Instead, mortgage cash flows were to be taxed first at the entity level and then at the investor level. This tax ruling made issuing multiple-class pass-through securities uneconomical and thwarted any issuances of this nature.

This ruling also influenced developments in the *pay-through* bond market. CMOs had to resemble debt obligations of the issuer – not ownership interests in the mortgages – in order to avoid the Internal Revenue Service's treating the issuance as a multiple-class pass-through security and subjecting the issuance to double taxation. This specifically means that various structural features need to be incorporated into a CMO issuance. These features include, but are not limited to, quarterly as opposed to monthly distribution of cash flows, call provisions, and the issuer's retaining a minimum interest in the collateral (generally equalling between one and one-half and two percent of the total value of the underlying mortgage pool). While the incorporation of these features is needed to obtain debt treatment for tax purposes, these features create another set of problems: the CMO is also treated as debt for accounting purposes.

Debt treatment for CMO issuances, as opposed to treatment as a sale of assets, necessitates that the issuer continue to carry the entire obligation on its balance sheet. Such a requirement inflates the size of the balance sheet and thereby reduces the issuer's capital-to-asset ratio. To avoid this balance sheet inflation, many CMO issuers have taken advantage of the special accounting rules concerning trusts. These rules state that if an institution owns less than 50 percent of the ownership interests in a trust, the institution does not have to consolidate its balance sheet with that of the trust for reporting purposes. One way for an institution to avoid inflation of its balance sheet is first to establish a trust to issue the CMO, and then sell over 50 percent of the ownership interests in the trust. Since the trust is the sole beneficiary of the excess cash (cash not needed

WHILE THE USE OF A TRUST PROVIDES A METHOD FOR AVOIDING THE INFLATION OF THE BALANCE SHEET, THERE IS STILL THE PROBLEM OF THE SEARS REGULATION: CAN THIS TRUST RETAIN ITS TRUST STATUS FOR TAX PURPOSES?

to pay bond holders and meet expenses) generated by the collateral over the life of the security issuance, buying an ownership interest in the trust entitles the purchaser to a share of these residual cash flows.

While the use of a trust provides a method for avoiding the inflation of the balance sheet, there is still the problem of the "Sears Regulation:" can this trust retain its trust status for tax purposes? The owners of the trust would own an undivided interest in the assets of the trust subject to the trust's obligations – the CMOs. Provisions designed to give the CMO issuance debt status for accounting purposes, however, may prevent the entity from claiming trust status for tax purposes. Specifically, trusts cannot be engaged in business. The inclusion in the CMO structure of call provisions and reinvestment powers by the trustee, however, may be viewed as engaging in business, thereby negating the entity's trust status for tax purposes. As such, income that ultimately flows to the trust's or residual's owners would first be taxed at the entity level, then at the investor level. While this is not as severe as the double taxation of all the cash flows, it still reduces the net benefits of the transaction.

In an attempt to remove the tax considerations from the structuring of multiple-class MBS transactions, the Tax Reform Act of 1986 allows the creation of REMICs.

REMICs

Under the Tax Reform Act, any entity, including a corporation, partnership, trust, or a segregated pool of mortages, that meets specified requirements relating to composition of assets and the nature of the investor's interests may be treated as a REMIC. All of the assets of the entity or pool must consist of qualified mortgages or permitted investments. A qualified mortgage is defined as any obligation (including any participation or beneficial ownership interest therein) that is principally secured directly or indirectly by an interest in real property. This means that REMICs can hold residential and commercial mortgages as well as mortgage-backed securities issued by Fannie Mae/Freddie Mac, or mortgages guaranteed by Ginnie Mae.

The tax code also allows REMICs certain permitted investments, including cash-flow investments, qualified reserve assets, and foreclosure property.

- **Cash-flow investments** are considered any investment of amounts received from qualified mortgages for a temporary period before distribution to the holders of interests in the REMIC. These assets are received periodically by the REMIC, invested temporarily in passive-type assets, and then paid out to the investors at the next regular payment date. An example would be the investment of the monthly cash flows in liquid assets pending quarterly distributions.
- **Qualified reserve assets** are any intangible property held for investment and as part of a "qualified reserve fund," maintained by the REMIC to provide for payments of certain expenses or for security to pay regular interest holders in the REMIC if delays or defaults on qualified mortgages reduce cash flows. Not more than 30 percent of the income from the reserve fund may be derived from the sale of property held for less than three months.
- **Foreclosure property** is property acquired by the REMIC in connection with the default or imminent default of a qualified mortgage. It ceases to be foreclosure property one year after its acquisition by the REMIC.

For an entity to qualify as a REMIC, all of the interests in the REMIC must consist of **one or more** classes of **regular** interest and **one** class of **residual** interests. **Regular interests** in REMICs have the cash flow characteristics of CMO tranches (fixed terms on the start-up day, e.g., stated principal and interest). Regular interests entitle the holder to receive a specified principal (or similar) amount and provide that interest (or similar) payments, if any, at or before maturity are based on a fixed rate (or to the extent provided in regulations, a variable rate). The timing (but not the amount) of the principal (or similar) payments is contingent on the extent of prepayments on qualified mortgages and the amount of income from permitted investments. Regular interests in REMICs may be issued in the form of debt, stock, partnership interests, interests in a trust, or any other form permitted by state law.

Residual interests in REMICs are any interests other than regular interests, provided that there is only one class and that all distributions with respect to such interests are pro rata. Since these interests are entitled to those cash flows not committed to regular-interest holders or needed to meet the other expenses of the issuance, they correspond in many ways to the previously identified ownership interests created by issuing CMOs through a trust structure.

The REMIC provisions become effective beginning after December 31, 1986. The legislation allows for a five-year transition period, during which current instruments (such as CMOs issued through owners' trusts) may continue to be used under the current taxable mortgage pool treatment. The new REMIC instrument would be phased in during this period (the mechanics of this phase-in have not yet been established) and issuers would be free to choose between both vehicles. Beginning December 31, 1991, REMICs will become the exclusive tax-free vehicle for the issuance of multiple-class securities. The Treasury department is required to publish guidelines concerning the phase-in period and other aspects of the REMIC legislation that require interpretation. Once such guidelines are published, most new issuances will likely be REMICs instead of CMOs. This is because REMICs retain all of the positive characteristics of CMOs and eliminate most of the negative characteristics.

THE CREATION OF REMICS SHOULD REMOVE MOST OF THE TAX BARRIERS ASSOCIATED WITH THE ISSUANCE OF MULTIPLE-CLASS PASS-THROUGH MORTGAGE SECURITIES.

Advantages and Disadvantages of REMICs

The creation of REMICs should remove most of the tax barriers associated with the issuance of multiple-class pass-through mortgage securities. Since, for tax purposes, this legislation allows institutions to treat the multiple-class securitization of mortgages as a sale of assets rather than as financing, institutions may structure the transaction so as to avoid inflation of their balance sheets and the corresponding deterioration of their capital ratios. The legislation does, however, allow institutions (that so choose) to structure the transaction as debt for accounting purposes yet treat it as a sale of assets for tax purposes. Thus, institutions packaging underwater assets into REMICs would not have to recognize a loss immediately for accounting purposes. Rather, these institutions would recognize the loss over the life of the security issuance.

The legislation includes at least two specific provisions that should increase the attractiveness to thrift institutions of holding mortgage-related securities. One of these provisions is that the REMIC legislation treats multiple-class securities issued through REMICs as "qualifying real estate investments" for tax purposes. This means that thrifts that purchase REMIC securities can count these holdings toward the required threshold needed to take advantage of thrifts' special bad-debt deduction. (Under the new tax code, this deduction will allow thrifts with at least 60 percent of assets in qualifying real estate investments to shelter up to 8 percent of their income from federal taxes.) Since CMOs were not afforded the same status, thrifts had a strong tax incentive to avoid purchasing CMO securities.

The second favorable provision of the REMIC legislation for thrifts is that a thrift can **fully** offset any income from holding residual interests in REMICs against its net operating losses. Nonthrift investors in residuals will be allowed to offset only **a portion** of their income from owning residual interest against their net operating losses. (The amount of income that nonthrift institutions can offset is equal to the adjusted cost of the residual interest multiplied by 120 percent of the long-term federal interest rate.)

The REMIC legislation should facilitate foreign investment in mortgage securities supported by seasoned mortgages. Previously, pass-through securities sold to foreigners that conveyed interests in mortgages originated prior to July 1984 were subject to a 30 percent withholding tax. Regular REMIC interests, even when supported by pre-July 1984 mortgages, will not be subject to this withholding tax.

The REMIC legislation also revises the rules for original-issue discount (OID) for all debt obligations issued after December 31, 1986, regardless of whether REMIC status is elected. OID exists when the purchaser of a security pays less money for the security than the stated principal to be repaid. (Examples of OID instruments are Treasury bills and zero-coupon bonds, both of which are sold at a discount.) Thus, a portion of the principal repaid is consideration for the use of money.

Prior to the REMIC legislation, OID for mortgages and mortgage securities was treated by the issuer as a yield adjustment and as such was amortized over the mortgage term. The mortgage term, however, did not reflect the likelihood of prepayment. Thus, an issuer of a discount CMO was required to amortize the discount over the life of the CMO assuming no prepayments, thereby significantly understating the issuer's true economic expense. If prepayments had been properly anticipated, the discount would have been amortized over a shorter period of time. The reduction in the amortization period would increase the interest deduction available to the issuer and thereby reduce the issuer's taxable income. Failure to adjust the amortization of the discount to reflect anticipated prepayments results in "phantom income" for the issuer (i.e., an issuer's noneconomic taxable income).

The Tax Reform Act authorizes an issuer to amortize the discount on mortgage securities over their estimated lives, based on a reasonable prepayment assumption. This will accelerate interest deductions and thereby reduce the potential for phantom income.

Effect on Thrifts

The adoption of the REMIC legislation does create a potential competitive disadvantage for thrift institutions. Namely, the managed cash flow feature of REMICs could substitute for the financial intermediation process of thrift institutions. The regular interest in REMICs could be an attractive substitute for thrift CDs, since regular interests could be collateralized with agency debt (as such they would be virtually risk free) and have denominations and terms that are similar to retail CDs. (While regular interests might be free from default risk, they are potentially subject to yield fluctuations due to prepayments. As such, they do not exactly resemble a thrift CD.) The residual interest in REMICs, however, may prove more attractive to investors than an equity investment in a thrift. Both residual interests in REMICs and equity in thrifts derive their value from approximately the same cash flows. Both are entitled to those cash flows generated by the mortgage assets that are not needed to pay regular-interest holders in a REMIC or the CD holders in a thrift. The REMIC, however, is not subject to corporate taxation. Thus, while the profits of thrifts are subject to corporate taxation before they are distributed to investors, the cash flows to residual holders are not subject to taxation prior to distribution. As such, investors may prefer to purchase residuals in REMICs instead of thrift stocks. This strategy avoids the double taxation of investors' income.

The explicit authorization for the participation of the federal credit agencies in REMICs could also be detrimental to the participation of other private issuers of mortgage securities. While Freddie Mac and Fannie Mae have helped to standardize the secondary mortgage market, they also dominate this market and may come to dominate the REMIC market as well. If this domination does not come from the explicit issuance of REMIC securities by these agencies, it will likely come from the use of their implicitly government-guaranteed securities to back the issuance of REMIC securities by private issuers. Either way, such domination tends to further expand the agencies' or the government's contingent liabilities and hinders further development of a fully private market in mortgage securities.

One aspect of the REMIC legislation that should assist the development of nonagency-backed securities is the allowance of **senior/subordinated** arrangements within the classes of regular interests. The senior/subordinated scheme works as follows: a portfolio lender wishes to sell most of a pool of loans, but the secondary market usually demands private mortgage insurance on the top 20 percent down payment **plus** an additional 5 percent mortgage insurance on the entire pool. In lieu of this insurance, the lender can satisfy the yield and risk requirements of the secondary market, for example, by selling senior interests up to a maximum 70 percent loan-to-value ratio on all loans and retain the remainder in portfolio. This scheme essentially takes a first mortgage and divides it into a first and second mortgage, where the lender retains only the second, and in the process removes the need for the pool insurance. Senior/subordinated arrangements are a valuable means to enhance the credit of mortgage securities where pool or hazard insurance is expensive or unavailable. As such, this allowance may be especially beneficial for securitizing commercial mortgages.

Prior to the REMIC legislation, repayment priorities were usually made within the context of the primary loan documents. That is, priorities were established by using first, second, and third mortgages. The REMIC legislation allows repayment prioritization to be achieved outside of the loan documents themselves. This allows the origination of mortgage loans without involving the borrower in the details of the segmented product. In effect, investors that buy the senior regular interest in a REMIC are purchasing the rights to the cash flows normally entitled a first mortgage holder. Investors in subordinated regular interest are purchasing the rights to the cash flows entitled a second or third mortgage holder.

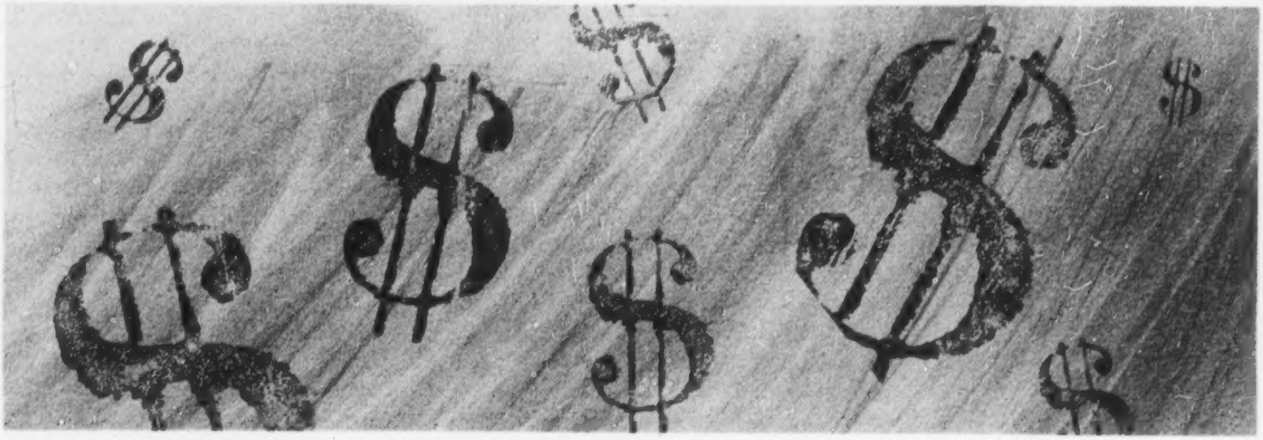
The presence of a subordinated interest enhances the credit quality of the senior interest. Depending on market conditions, this may allow for a more economical financing. Furthermore, since both senior and subordinated interests in REMICs are transferrable, existing loans that do not segment or prioritize cash flows can be repackaged to capitalize on changing market conditions.

Residuals

As described above, the REMIC legislation allows for the creation of multiple classes of regular interest holders and one class of residual interest holders. Regular interests in REMICs should have investment characteristics that are similar, if not identical, to those of existing CMO tranches. The investment characteristics of residual interest are not as well defined. As such, concern arises over the appropriate categorization and regulatory treatment of residual interests in REMICs.

Sources of Residuals

Residuals arise because over-collateralization requirements and other features of the mortgage securitization process usually generate cash flows in excess of those necessary to meet the requirements of regular interest holders. To ensure that the cash flows generated by the collateral are sufficient to support the regular interests, the major rating agencies require issuers to use very conservative assumptions in structuring a transaction. For example, issuers must assume that above-par



SINCE SOME MORTGAGE SECURITY ISSUANCES HAVE POTENTIAL LIVES IN EXCESS OF TWENTY YEARS, THE EXACT ADMINISTRATIVE COST ASSOCIATED WITH THE TRANSACTION IS OFTEN UNCERTAIN (SOME RECENT ISSUANCES HAVE LOCKED IN THE FEES FROM THE START).

mortgages will prepay very rapidly. Excess cash flows, or residuals, occur when actual prepayments deviate from this assumption. For example, if a mortgage-backed security is supported by above-par collateral that does not prepay rapidly, then the interest differential between the coupon on the collateral and the coupon on the newly issued mortgage security will generate a positive cash flow. Since the transaction is structured so that this income stream is not needed to meet the requirements of the regular-interest holders, it is available to the owners of the residual interest. When using par or below-par collateral, the rating agencies require the issuer to assume that the collateral will not prepay at all. Excess cash flows are generated when prepayments on the below-par collateral actually occur. Thus, one source of the residual interest's value ultimately depends on the prepayment speed of the collateral, which in turn, depends primarily on market interest rates relative to the rate on the underlying mortgages.

Residuals can also result when reinvestment income exceeds expectations. Since mortgage-backed securities often pay quarterly or semiannually, while mortgage payments are received monthly, there is reinvestment income while the mortgage income is being held. For structuring the transaction, the rating agencies require issuers to assume relatively conservative rates of returns on these reinvestment funds. Excess cash flows arise if actual returns exceed the assumed reinvestment rate.

Another source of income for residual-interest holders is from the over-collateralization required if there is a risk of default on the collateral. This is especially true in mortgage securities supported by mortgages that are not guaranteed by a federal agency. To the extent that actual defaults are less than expected, the cash flows from these mortgages are available to pay holders of residual interests.

The cash flows available to residual-interest holders are also affected by the costs associated with the ongoing nature of the transactions. Most mortgage-security issuances have trustee fees, accounting fees, management fees, and rating agency fees. Since some of the securities have potential lives in excess of twenty years, the exact administrative cost associated with the transaction is often uncertain (some recent issuances have locked in the fees from the start). Under a trust structure, this uncertainty raises the possibility that investors in residuals could lose more than their investment. For example, suppose that most of the mortgages in a security backed by above-par collateral prepay. The residual holder would lose much of his investment as the prepayment eliminates the premium component of the security. Then, suppose that administrative costs are more than the remaining excess cash flows. The owners of residual interests in a trust structure would be responsible for contributing the necessary resources to ensure the successful completion of the transaction. This possibility explains why the rating agencies have required that residuals in trust structures be sold only to investors with adequate capital to meet the expenses and potential liability, should the excess cash flow be inadequate.

The REMIC legislation allows REMICs to be structured in a manner that reduces many of the concerns associated with losses due to liability and administrative expenses. Prior to REMICs, residuals of owners trusts were structured to quality as partnerships under the tax law if they were denied grantor-trust level. To achieve this result, however, residual ownership interests generally were structured to prohibit transferability without the consent of the other owners and to carry unlimited responsibility for the costs and liability of the trust. When single-level taxation is granted by statute, regardless of legal structure, the transferability and unlimited liability provisions can be eliminated. While this reduces some of the uncertainty associated with the returns on residuals, it by no means makes such investments risk-free.

Investment Characteristics of Residuals

The value of a residual-interest security is highly dependent upon the structure of the transaction and the characteristics of the collateral that underlies the transaction. For example, the amount of reinvestment income available to residual-interest holders will in part depend on whether the securities pay monthly, quarterly, or semiannually.

The value of residual interests and their sensitivity to changing interest rates are also influenced by the characteristics of the collateral. If interest rates rise, mortgage prepayments slow down. This slowdown in prepayments tends to delay the cash flows received by residual-interest holders. Delay in cash-flow receipts would normally be associated with a decline in the present value of the residual. An increase in interest rates also increases the appropriate discount rate for calculating the present value of cash flows and thereby further reduces the value of the cash flows available to residual-interest holders.

An offsetting influence on the value of residuals is available, however, for securities backed by premium collateral. As interest rates rise, the slowdown in prepayments on the collateral extends the time during which excess cash flows are generated by the spread

RATHER THAN DESIGNING EXOTIC STRUCTURES TO AVOID NEGATIVE TAX IMPLICATIONS, WITH REMICs, INSTITUTIONS CAN DEVOTE THE EFFORTS TO CREATING PRODUCTS BEST SUITED TO THE ECONOMIC ENVIRONMENT.

between the coupon on the premium collateral and the lower coupon on the securities. As such, the total cash flow available to residual-interest holders in a REMIC supported by premium collateral is increased. The net effect of rising interest rates on value of residuals depends on the interaction among the higher discount rate, the delay in the return of principal, and the increased cash flows generated by the positive coupon spread. Since there is a limit to how far prepayments can slow and therefore how long the positive coupon spread can be maintained, at some point rising interest rates must reduce the value of the residual. The exact crossover point depends on the sensitivity of the prepayment rate on the collateral to changes in interest rates.

Since the coupon spread between discount collateral and securities issued at par is likely to be much smaller than that associated with premium collateral (in fact, it might be nonexistent if the issuance is done for restructuring and not for arbitrage), the offsetting effect on the value of residuals from an increase in interest rates is likely to be much less dramatic. If there is not a positive spread between the coupon on the collateral and that on the securities, then rising interest rates will tend to reduce the value of residual interests.

The analysis is reversed for a decline in rates. A decline in rates increases prepayments on the collateral. This speeds the return of principal and thus increases the speed with which cash flows are received by residual-interest holders. The decline in interest rates also reduces the appropriate discount rate for finding the present value of the cash flows. While each of these effects tends to increase the value of the residual, the decrease in rates and corresponding increase in prepayments tend to reduce the cash flows generated by the positive spread between the collateral and the securities. In the extreme case, a decline in rates could lead to all the collateral prepaying and the elimination of the positive spread. Since there would be no excess cash flows (premium collateral repays at par), the rapid increase in prepayments would eliminate the value of the residual. Of course, if the securities issuance was supported by discount collateral and a negative spread existed (such as would occur with a restructuring issuance), then the rapid increase in prepayments would eliminate the negative spread and increase the value of the residual. The mortgages would prepay at par, not at a discount, and the differential would be available to the residual-interest holder.

The value of the residual will therefore be influenced by the relationship among the coupon rate on the securities, the rate on the collateral, and current market interest rates. The market will price these securities based on its expectation of future movements in interest rates, their effect on the prepayment spread of the collateral supporting the REMIC issuance, and the uncertainty associated with both of these estimates.

Conclusions

While some observers have touted the REMIC legislation as a revolution in mortgage finance, its net effect is open to debate. The primary benefit of the REMIC legislation is that it provides clarification on the tax status of multiple-class mortgage-backed securities. It does not create a new technology. REMICs will continue to apply the cash flow prioritization technology engineered by the development of the CMO. While the clarification of tax status will probably increase the efficiency of the mortgage-backed securities market, it seems unlikely that it will result in such dramatic efficiency gains so as to result in a significant decline in mortgage rates to the home buyer.

The REMIC legislation may result in an increased standardization in the mortgage-backed securities market. Rather than designing exotic structures simply to avoid the negative tax implications associated with multiple-class mortgage-backed securities, with REMICs, institutions can devote their efforts to creating products that are best suited to the economic environment. If the REMIC legislation does result in increased standardization, this would likely increase the liquidity of the secondary market and may thus result in a small decline in mortgage rates.

While the REMIC legislation does not, by itself, create safety and soundness considerations, it does bring many of the concerns in this area to the forefront. Since most mortgages give the borrower the right to repay at any time, there is uncertainty associated with the timing of these repayments. The CMO technology, with its cash-flow prioritization, was designed to reduce this uncertainty. While this technology does reduce the uncertainty in some classes, it increases volatility in other classes. Likewise, the recent innovation of the floating-rate CMO translates into greater uncertainty in the nonfloating-rate classes.

The CMO technology, as applied through the REMIC structure, should offer thrifts the opportunity to select assets (i.e., various classes of REMICs) that reduce the maturity mismatch of a typical thrift's portfolio. How a particular regular interest or residual interest fits into a thrift's portfolio ultimately depends on the interest sensitivity of the rest of the portfolio relative to that of the selected asset. In the selection of a particular class, analysis must be conducted to determine the specific characteristics of that class. Thus, while the REMIC legislation and the CMO technology offer opportunities to reduce risk, failure to conduct the proper analysis can result in increased risk exposure. □

Real Estate Investments: What the Future Holds

William C. Goolsby

Traditionally, real estate investments have been made for three major benefits: cash flow, appreciation, and tax advantages. The relative importance of these benefits is presently undergoing a fundamental realignment due to the complete revision of the tax code that took place in 1986.

Many key provisions of the 1986 Tax Reform Act* have had a direct effect on real estate investments, and there is much speculation about the resulting impact on the future of those investments.

Recent History of Tax Reform

In 1981, the government greatly enhanced the tax advantage benefit of real estate ownership with the Economic Recovery Tax Act of 1981. In an attempt to foster economic growth and development, this act created a tax system that greatly encouraged and favored investments in real estate above other competing investments. The principal provision favoring real estate was the reduction to 15 years of the tax life of buildings from the asset depreciation range that had previously provided tax lives of up to 60 years. The combination of this rapid write-off with 175 percent declining balance depreciation, the favorable treatment of long-term capital gains, and the exemption of real estate from the at-risk rules that applied to other types of investments produced an ideal situation for sheltering income through real estate investments.

**Discussions here are brief and provide only a survey of the relevant provisions in the new tax act, with no attempt to explain details. For more information, the interested reader should refer to the articles listed in the bibliography.*

The real estate industry responded quickly to the incentives provided by Congress. Limited partnerships, which were the principal investment vehicles for tax shelters, grew rapidly. Money raised through real estate syndications, both public and private, increased from approximately $2.5 billion in 1980 to more than $13 billion in 1985. This rapid rate of growth alarmed many and led to charges of tax abuses and the renewed spectre of multimillionaires' paying little or no personal income taxes. At the same time, revenue from the corporate income tax declined significantly, reflecting the influence of the 6 and 10 percent investment tax credits and the short tax lives of three or five years that were established for machinery and equipment.

The Tax Reform Act of 1986 that followed was an extreme blow to investments in real estate. After creating a tax system that encouraged investments in real estate as a means of reducing the tax obligations of investors, the Congress turned against its own creation and essentially eliminated all of the tax benefits that favored real estate over other investments. Virtually all of the favorable tax treatment that had been instituted only five years earlier was swept away. In a sense, the pendulum that swung towards favoring real estate investments in 1981 went the other way in 1986, wiping out the 1981 preferences along with some of the preferences in effect prior to 1981.

From the standpoint of tax policy, developments in tax law in 1981 and 1986 provide a good example of the continuing conflict in a free enterprise system between the need for efficiency and economic growth on the one hand and the desire for equity on the other. Tax incentives can be used to direct the investments of the affluent into specified areas by offering reduced taxes. The reduced tax loads may then be seen as unfair because the affluent taxpayers may, as a result, pay lower taxes than the less affluent taxpayers, who lack the investment capital needed to take advantage of these opportunities.

Taxes on capital accumulations also pose a similar dilemma. In a free enterprise economic system, capital must be owned by the individual citizens. Individuals must then save and accumulate capital if there is to be an increase in the productive capacity of the labor force. Taxing capital discourages this process of saving and accumulating capital and directly reduces the supply of investment capital in the hands of the savers. However, such taxes may be seen as equitable because they also reduce the disparities in wealth between individuals.

The dilemma cannot be resolved. Tax policies that tend to equalize wealth and income tend to reduce capital accumulation. Tax policies that tend to direct capital investment into specified areas lead to charges of abusive tax shelters and discrimination. The best that the Congress can hope to achieve is to steer a middle road, sometimes veering left and sometimes veering right, but avoiding the disruptive turns and abrupt shifts in policy that occurred in 1981 and 1986.

In summary, nine provisions of the 1986 Tax Act had a direct negative impact on real estate investments:

(1) Restrictions on the utilization of passive losses from real estate to offset income from wages and salaries or "portfolio" income
(2) An increase in the tax life of improvements under the accelerated cost recovery system (ACRS)
(3) Restrictions on the depreciation of leasehold improvements
(4) Reduction in tax credits for rehabilitating historic and nonresidential buildings over 30 years of age
(5) Repeal of the special treatment of long-term capital gains
(6) Extension of the at-risk rules to real estate investments
(7) Restrictions on installment sales
(8) Restrictions on interest deductions
(9) Elimination of special tax preferences for low-income housing

On the positive side, the Tax Act provided four provisions that should make real estate investments more attractive:

(1) A new system of credits for investment in low income housing
(2) No change in the rules for tax-free exchanges of like-kind real estate
(3) Restrictions on the deduction of interest on consumer purchases other than on mortgages for first and second homes
(4) Lower rates of tax on ordinary income

Restrictions on Passive Losses

The 1986 Tax Act provides that deductions from passive trade or business activities cannot exceed the income from passive trade or business activities. This means that a loss from a real estate investment cannot be used as a deduction to reduce taxes owed on income generated by nonpassive income from wages, salaries, and payment for services or from "portfolio" income derived from interest, dividends, royalties and gains from the sale of property held for investment. This provision is phased in over a five-year period, to become fully effective in 1991.

All rental activities are defined as passive with the exception that individual taxpayers with limited incomes who actively participate in the management of property and who own at least a 10 percent interest in the property involved may continue to take deductions up to a limit of $25,000. For individuals with adjusted gross income in excess of $100,000, this maximum deduction is reduced by 50 percent of the amount of the taxpayer's adjusted gross income that exceeds $100,000, so that the deduction is completely eliminated when the adjusted gross income reaches $150,000.

Unused deductions for losses from passive activities may be carried forward and used as deductions if the investment eventually becomes profitable or when some other passive real estate investment produces a profit, or to reduce the taxable gain on the sale of the property.

This change in the tax law can be expected to affect real estate investments adversely. Many taxpayers who purchased limited partnership interests

Passive Income Generators (PIGs) are high-equity investment partnerships that can be balanced off against the old tax shelter partnership interests so that individuals who own both types can continue to receive tax-free income.

in response to the incentives provided by the 1981 Law are now left with interests that are greatly diminished in value or made worthless by the new law. To make matters worse, many of these interests were sold on a time payment plan, so that investors have contractual obligations to continue to make payments on their investments with little or no prospect of a return.

The industry that grew up to provide limited partnership interests for tax shelter purposes is now transformed. New offerings are designed with lower financial leverage to provide taxable earnings. Called Passive Income Generators (PIG), these new high-equity investment partnerships can be balanced off against the old tax shelter partnership interests so that individuals who own both types of partnership interests can continue to receive tax-free income.

Increase in the Tax Life of Improvements

A depreciation deduction is a deduction for an item that is not an out-of-pocket expense for the owner. It gives the owner an immediate tax savings due to the deduction while creating a deferred tax obligation by reducing the basis in the property that will be subtracted from the sales price to determine the capital gain when the property is sold. On the one hand, an immediate tax savings is gained from the deduction, but this increases the amount of the taxable gain or reduces the amount of the deductible loss when the property is sold. Therefore, more taxes will be owed in the year of sale as a result of depreciation deductions.

The advantage to the taxpayer of depreciation deductions is that the tax savings from deductions occur at an earlier time than the increased taxes in the year of sale. Before 1987 the taxpayer also had the advantage that the increased capital gain created by depreciation deductions was only 40 percent taxable if the taxpayer was careful in choosing the right depreciation schedule.

Since 1981 and before 1986, the tax life of improvements had been increased twice, from 15 to 18 years, and then from 18 to 19 years. The tax life of 15 years had been retained only for low-income housing.

The new law establishes a tax life of 27.5 years for residential rental property (including low income housing) and 31.5 years for all nonresidential real property. Hotels, motels, and other properties where more than half of the units are occupied by transients are classified as nonresidential for this purpose. Otherwise, residential rental property is defined as property where 80 percent or more of gross rental income (including the rental value of any portion occupied by the owner) is derived from dwelling units.

Straight-line depreciation is the only method allowed, and all capitalized improvements or additions must be depreciated straight line over a period of 27.5 or 31.5 years, commensurate with the property class.

Depreciation deductions are substantially reduced in the years immediately following purchase by the present act. With the 1981 Act, the first year's depreciation could have been as high as 13 percent of the total value of the improvements. Now, the first year's deduction cannot exceed 4 percent for residential property and 3 percent for nonresidential property. These figures represent an astounding reduction to about 25 to 30 percent of the 1981 level.

Spreading depreciation deductions over a longer term has the effect of reducing the present value of the tax savings generated by the depreciation deductions and thereby increasing the present value of the taxes on property. If a 12 percent rate of discount is used, the present value of $1 in depreciation deductions at the old top tax rate of 50 percent, taken straight line over 19 years, would be about 19 cents. This same depreciation deduction taken over 31.5 years at the new top rate of 28 percent would be worth about 7 cents. This represents a reduction in the present value of the tax savings from depreciation deductions of 63 percent. Clearly, the reduction in the tax benefits derived from depreciation deductions will adversely affect real estate investments.

Restrictions on Leasehold Improvement Depreciation

Prior to 1986, tenants who made improvements to their leaseholds were allowed to depreciate these costs using the ACRS recovery period for the property class or to amortize the costs over the remaining term of the lease, whichever was shorter. This is no longer allowed. Tenants must now depreciate improvements over 27.5 years for residential property or 31.5 years for nonresidential property, regardless of the time remaining on the lease. Any unrecovered costs can then be deducted at the end of the lease term.

This provision is probably not of great significance to real estate investments in general, but it does reduce the benefits from leasing relative to ownership. It also neutralizes the treatment of tenants and owners with respect to the annual deduction that would be allowed for any improvement.

Reduction in Rehabilitation Tax Credits

Previously, three different tax credits were available for the rehabilitation of property. There was a 25 percent tax credit for the rehabilitation of

Taxing long-term capital gains inhibits investment capital from being allocated to its most efficient use by inhibiting the sale of assets and the reinvestment of the proceeds of the sale.

certified historic properties, either residential or nonresidential; a 15 percent credit for the rehabilitation of nonresidential buildings that were at least 30 years old; and a 20 percent credit for the rehabilitation of nonresidential buildings that were at least 40 years old.

These credits have been replaced by two credits. The tax credit for the rehabilitation of certified historic structures was reduced to 20 percent, and the tax credit for the rehabilitation of nonresidential structures was reduced to 10 percent and now applies only to buildings that were at least 50 years of age in 1986.

The reduction in the amount of the credits was coupled with restrictions on the amount that any one taxpayer could deduct in a given year. The restriction is that the credits cannot reduce the tax owed on non-passive income by more than the amount that would have resulted from a $25,000 deduction. Consequently, the maximum credit in one year (after 1987) for an individual who has no passive income would be $8,125 for a taxpayer at the intermediate rate level of 33 percent; $7,000 for a taxpayer at the highest rate level of 28 percent; and $3,750 for a taxpayer at the lowest rate level of 15 percent.

The reduction in the amount of the credits and the new restrictions on the deductibility of these credits will undoubtedly reduce rehabilitation of historic and older properties. The 20 percent reduction in credits for historic properties and the 50 percent reduction for properties that are 50 years old and older will have a major impact. The elimination of properties between the ages of 30 and 50 and the new restrictions on the type of income that the credits can be applied against further inhibits the rehabilitation efforts. Central cities and warehouse and industrial areas will be impacted most by these changes.

Repeal of Special Treatment for Long-Term Capital Gains

Long-term capital gains have been traditionally treated more favorably than ordinary income or short-term capital gains by our tax laws. There are two very good reasons for providing preferential treatment for long-term capital gains.

First of all, long-term capital gains may not represent any improvement or gain for the property owner. The so-called gain may be simply the result of a decline in the value of money or inflation. This decline in the value of money causes the price of property denominated in money to rise accordingly. The real value of the property may have actually declined, but this fact is masked by inflation. Therefore, from an equity point of view, the sales price should be first deflated by a factor that will allow it to be expressed in terms of the original purchasing power of the dollar. After this adjustment, the basis in the property can be deducted to determine the real gain or loss from changes in value.

Secondly, taxing long-term capital gains inhibits investment capital from being allocated to its most efficient use by inhibiting the sale of assets and the reinvestment of the proceeds of sale. This happens because our current tax structure taxes recognizes only gains from property appreciation. So long as the property is not sold, a gain in value is not subject to taxation, and if the property is held until the death of the owner the capital gain escapes taxation completely because the heirs take the property with a tax basis equal to the fair market value at the time of acquisition without regard for the basis of the previous owner. As a consequence, taxes on long-term capital gains discourage the sale of property and, the higher the tax, the greater is the discouragement.

The inefficiency results from the fact that owners are discouraged from selling their property to take advantage of better investment opportunities. The result is that capital investments earn a lower rate of return than would have been earned in the absence of the tax. The total output of the national economy is reduced as a consequence of this lower productivity of capital investments.

The 1986 Act increases the tax on long-term capital gains from a maximum of 20 percent of the gain to a maximum of 28 percent in 1987 and then to 33 percent beginning in 1988. This represents a 40 percent increase for 1987 and a 65 percent increase for 1988 and thereafter.

Real estate investments will be most severely impacted by this change in the treatment of long-term capital gains because the basis in property has, in most cases, been reduced by depreciation deductions that will increase the amount of the eventual gain. Under prior law, the owner of real property was encouraged to take rapid write-offs because the depreciation deductions reduced ordinary income and produced a deferred tax liability in the form of an eventual long-term capital gain that was only 40 percent taxable.

The immediate impact of this increase in the rate of tax on long-term capital gains will be a slowdown in the turnover of existing properties. After this, there will be a decline in new construction due to the reduced after-tax income that will be available from real estate.

Extension of At-risk Rules

A general principle of tax law is that taxpayers may not take deductions from any investment that exceeds the amount of money the taxpayer has risked on the venture. The amount at risk was the amount that the investor invested in the venture plus any loans for which the taxpayer was personally liable.

Real estate investments under the prior law were generally exempted from this rule. Investors could purchase property financed with nonrecourse (no personal liability) mortgages and use the entire cost of the property as a basis for deducting losses, even though their equity investment was the only money at risk.

The current law retains this preference for real estate investments, but the lender must now be a lender who regularly makes loans, is unrelated to the taxpayer, is not the seller of the property, and is not the recipient of a fee for promoting the sale of the property. If the lender meets all of the required tests, the financing can be considered "qualified nonrecourse financing," and the exemption to the at-at-risk rules remains unchanged.

Any nonrecourse financing that fails to meet the tests for "qualified nonrecourse financing" will result in a reduction in the basis for loss by the amount of the nonrecourse financing. This new provision and lender tests will primarily affect sales of property where there is owner financing. Purchasers will now be required to assume personal liability for any mortgages that do not qualify as "qualified nonrecourse financing" or lose a portion of the basis for loss deductions.

We can expect to see fewer instances of seller financing of properties in the future. The extension of the at-risk rules to real estate investments where there is owner financing, plus the new limitations on installment sales, will make owner financing generally unattractive.

Restrictions on Installment Sales

Before 1987, taxpayers were allowed to sell property and recognize the gain on sale from the property as the gain was received. Basically, a taxpayer could elect to use the installment sale method of reporting a gain. Then the taxpayer would ascertain the percentage of the proceeds of sale that constituted gain, and as the proceeds were received, the taxpayer would report that percentage of the proceeds as gain in the year of receipt.

For example, if a taxpayer sold a property where 50 percent of the proceeds of the sale constituted gain, the taxpayer would report half of any proceeds received each year as gain in that year until the entire gain was eventually recognized. Interest paid on outstanding principal would constitute ordinary income separate from any gain calculations.

This method is unchanged for farms, time-share sales, personal use property, and for any properties that sell for a price of $150,000 or less; but for other properties, there has been a change for taxpayers who owe money for any reason. For these taxpayers there is a newly enacted proportionate disallowance rule limiting the amount of the gain that qualifies for a deferral of recognition beyond the year of sale.

This rule requires the taxpayer to divide the taxpayer's total liabilities by the taxpayer's adjusted basis in all assets to determine the proportion of the taxpayer's adjusted basis financed by debt. This proportion is then multiplied by the amount of the potential gain from the sale of the property to determine the amount of the gain that is ineligible for the installment sales method of reporting gain. Subsequent increases in debt relative to basis in assets will lead to further disallowances in succeeding years. (All sales made after March 1, 1986 and before January 1, 1987 will be subjected to this rule as if properties were sold in 1987.)

As noted above, these limitations on installment sales, combined with the extension of the at-risk rules to real estate investments where there was seller financing, will severely restrict the supply of seller financing in the future. This will have a negative impact on the value of real estate investments.

Restrictions on Interest Deductions

The 1986 Act places new restrictions on the deduction of investment interest. Interest on indebtedness used to acquire or carry passive investments, limited partnership interest expense, interest paid on borrowings of a Subchapter S corporation or interest on any other business activity in which the taxpayer does not materially participate can be deducted only to the extent that there is otherwise taxable income from these sources or otherwise taxable income from gain on the sale of investment property.

These limitations on the deductibility of interest expenses will reduce the supply of investment capital to these activities, thereby producing a negative impact on the value of real estate investments in general.

Elimination of Preferences For Low-Income Housing

Low-income housing previously was allowed three major tax incentives that are now eliminated: a 15-year accelerated depreciation schedule using a 200 percent declining balance; a five-year amortization of qualified expenditures to rehabilitate housing units; and the full deductibility of construction period interest expense during the construction period for either new construction or the rehabilitation of the housing.

These preferences have been replaced with a new system of credits for investments in the construction or rehabilitation of low-income housing. The impact on low-income housing will depend on whether the new credits are a better or worse incentive for investment than the previous incentives.

New System of Credits for Low-Income Housing

A new system of credits for the construction or rehabilitation of low income housing has been enacted. These credits are 9 percent annually for 10 years on the taxpayer's cost basis in qualified new buildings; and rehabilitation expenditures that are not federally subsidized dwelling units, or 4 percent annually, on the cost of acquisition, certain rehabilitation expenditures incurred in connection with the acquisition of an existing building, and federally subsidizing new building or rehabilitation expenditures.

Qualification for either of the credits requires that 20 percent or more of the residential units in all existing buildings in a project must be occupied by families or individuals with incomes, adjusted for family size, that are 50 percent or less of the area's median income; or 40 percent or more of the units must be occupied by families or individuals with adjusted incomes at or below 60 percent of the area's median income. The gross rent paid by families occupying units that qualify for the credit cannot exceed 30 percent of the applicable qualifying income for a family of its size.

The credits are further restricted if all of the units are not occupied by low-income individuals or families. In this case, a percentage of the applicable credit is allowed, based on the percentage of the units that are occupied by low-income occupants.

Acceptance of the credits requires compliance, with annual certification, for a minimum of 15 years, or there will be a recapture, with interest, of a portion of credits previously allowed. Failure to comply with the minimum set-aside requirements, the gross rent requirement, or any other requirement during the compliance period will trigger the recapture provision. A reduction in the number of units rented to low-income households that does not reduce the number of units below the minimum set-aside requirement will result in a partial recapture of credits on the portion of the property that is no longer in compliance. Sale of the property also triggers recapture of the tax credits unless the former owner is willing to establish a bond guaranteeing that the new owner will continue to comply with all requirements.

The maximum amount of tax credits that one taxpayer can use to offset taxes on non-passive income is restricted to the amount of taxes that would be owed on $25,000 of income for individuals with adjusted gross income of less than $200,000. This ability to offset taxes on non-passive income is phased out at a rate of 50 percent of income earned above $200,000, so that no offset of taxes on non-passive income is allowed for taxpayers with adjusted gross income above $250,000.

The complications and oversight requirements of these credits greatly reduce their usefulness. In order to receive the credits, the property owner must enter into a long-term commitment to maintain the property as low-income property for a period of 15 years. Even though the credits appear very attractive at first glance since they can potentially return 90 percent of the investment over a 10-year period, the limitations on credits against taxes owed on non-passive income, the complicated nature of the compliance requirements, and the increased level of oversight are very negative.

On balance, the new system of tax credits for low income housing does not appear to be as advantageous as the previous tax benefits. The value of low income housing is expected to decline, and the supply of low income housing will probably be reduced in the future by these changes.

Tax-Free Exchange of Like Kind Property

The new Tax Act has left unchanged the provisions for tax-free exchange of like-kind property. These provisions are of increased importance now, due to the great increase in the rate of tax on long-term capital gains.

Real property that is held for use in a trade or business or as investment property qualifies as like-kind property. This means that a farm can be exchanged for a parking lot, for land being held for appreciation, or for an office building, apartment house, retail store, etc. The only restrictions on these exchanges are that real properties held for personal use or for sale by a dealer in properties do not qualify for tax-free exchanges.

The qualifying properties may be exchanged in either a simultaneous or nonsimultaneous exchange. A simultaneous exchange occurs when both properties are currently owned by the two parties involved, and titles are exchanged at one point in time.

A nonsimultaneous exchange occurs when the acquiring individual does not initially own the property to be exchanged. In this case, the seller of the first property indicates at the time of the sale that he wishes to receive property in exchange for the property he is giving up. The seller must then escrow the funds from the sale and identify the property to be received in exchange within 45 days of the sale of the first property. Thereafter, the seller has 180 days or until the last scheduled date for filing the current tax return (including the extension period), whichever is shorter, to utilize the escrow funds and purchase the property to be received in exchange.

So long as (1) the property received in exchange is at least as valuable as the property sold, (2) there is no receipt of cash, boot, or net debt relief, and (3) the time restrictions are met, there will be no requirement for a recognition of gain. Partial recognition will be required if cash or boot is received or if the property received in exchange has a lower market value than the formerly owned property. Net debt relief may also trigger recognition of gain.

Tax-free exchanges do not in themselves contribute to the supply of real estate, but these exchanges relieve some of the effect of heavier taxes on long-term capital gains by allowing, to a limited degree, investors to change investment vehicles without triggering a tax on gains.

Restrictions on Deduction of Consumer Interest

The 1986 Tax Act phases out the deduction of interest on consumer purchases with the exception of interest on mortgages on first and second homes. Interest charges on mortgages up to the original cost of the homes plus home improvements, and, in some limited circumstances (mortgages taken out for medical and educational expenses), on mortgages in excess of cost are fully deductible.

The ability to continue to deduct interest on home mortgages makes the

THE ABILITY TO CONTINUE TO DEDUCT INTEREST ON HOME MORTGAGES MAKES THE PROSPECT OF HOME OWNERSHIP MORE ATTRACTIVE THAN BEFORE.

prospect of home ownership more attractive than before. Consumers who own homes can now take out home equity loans and pay off their charge cards, auto loans, and other consumer loans and continue to deduct the interest for these purchases, while consumers who do not own homes will not be allowed to deduct interest on indebtedness incurred for consumer goods.

Lower Rates of Tax on Ordinary Income

Beginning in 1988, ordinary income will be taxed at rates of 15, 28, 33, and 28 percent. The reduction in the top rate of tax from 50 percent to 28 percent represents a 44 percent reduction in the marginal rate of tax for the top-income recipients. For middle-income recipients, however, there has been very little change. The 5 percent surcharge on taxable income between $71,900 to $149,250 for married taxpayers, filing jointly; between $61,650 and $123,790 for heads of household; and between $35,950 and $113,300 for single individuals brings the tax rate up to 33 percent in these ranges. Above these levels, the rate drops back to 28 percent again, so that we have a strange phenomenon where middle income is taxed higher than higher income.

Tax relief is therefore far more important for high income earners than for the middle-income earners. Consequently, the impact of tax reform should be to increase the supply of investor capital from high-income individuals while making little or no change in the supply from middle-income earners.

These changes will have a mixed impact on real estate investments. Higher income individuals will have more funds to invest as a result of the reduction in taxes, but they will find real estate investments less attractive than before the change. The new limitations on passive loss deductions and the higher taxes on long-term capital gains make real estate investments far less attractive for this group of investors. The reduced tax rate for these investors will also make traditional tax-sheltered investments less attractive. For the highest income individuals, a $1 tax deduction saved the individual 50 cents before the tax reform, whereas it will save only 28 cents afterwards.

Middle-income individuals will not be greatly affected by the change in tax rates. The new 33 percent tax rate is very close to the rate of tax they were paying before. These taxpayers will, however, be turned away from real estate by the passive loss limitations and the higher tax on capital gains. Smaller real estate investments that have been traditionally owned by middle-income taxpayers have retained some benefits due to the ability to utilize some losses on real estate for individuals with incomes below $150,000. Another benefit is tax credits for individuals with incomes below $250,000 to reduce taxes owed on non-passive income. Consequently, smaller real estate investments such as rental houses, duplexes, etc., will be relatively unaffected by the new tax law.

Dealers in real property and others involved in the short-term sale of real property will be generally helped if the new tax rates are below the rates they were previously paying. The larger dealers and high-wage individuals will be greatly helped by the reduction in tax rates on ordinary income.

Overall, the reduction in the maximum tax rate will probably have little effect on the demand and supply of real estate investments. The positive benefit of a lower rate of tax is balanced against the lower benefit that would be derived from a tax deduction.

Summary

The most detrimental action taken by Congress in the 1986 Tax Reform Act was the elimination of the special treatment of long-term capital gains. The old method of taxing only 40 percent of the gain was theoretically indefensible because 40 percent might be close to the amount of the gain attributed to inflation, or it might not be. In some cases, the entire gain might be attributed to inflation, and in other cases none of the gain could be attributed to inflation. This provision undoubtedly needed reform, but the solution of eliminating the special treatment of long-term capital gains altogether was not a good alternative.

The new system requires taxpayers who may have suffered a loss in purchasing power due to the erosion in the value of money to pay taxes as if they had made a real gain. The only relief provided in the tax code is that these taxpayers may continue to hold onto their investments and avoid recognition of gain, or they may exchange the property for other real estate and carry their gain forward. If the investors are willing to retain ownership of real estate investments until death, they can entirely avoid payment of the tax, but this may prove extremely difficult for taxpayers who need to fully liquidate their investments. (Partial liquidation can be achieved through increasing mortgages without any tax consequences.)

Perhaps the Congress will recognize the error that has been made here and allow either an increase in the original cost basis or a reduction in the sales price of the property to a point where the basis for determining the gain and the sales price of the property are both expressed in dollars of equivalent purchasing power. Until this correction is made, the rate of turnover in properties will be greatly reduced, and there will be an increased emphasis on like-kind exchanges in future years.

The second most detrimental action of the 1986 Tax Act is the new limitations on the deductions of losses from passive investments. The 1981 Act set up the incentives for investors to put large sums of money into these investments with the expectation that they would be able to deduct the losses against income from all sources.

Investors who responded to the 1981 incentives are now left with losses that cannot be deducted from any income except income derived from similar passive investments. New master limited partnerships and all-cash or low-leverage syndications are now emerging to provide income from passive ventures that can be sheltered by the tax losses incurred from the older, limited partnership interests. To some extent, the shelter salesmen of the past have now turned to marketing syndications that are less heavily leveraged and therefore capable of generating taxable income.

For investors with sufficient funds, the tax losses can still be utilized by investing in the new offerings, but others will be unable to take advantage of this benefit. Investors who wish to sell their units will find that limited partnership units normally sell at a heavy discount below the initial cost, and many units, especially those where the owners are still paying in funds, are virtually worthless.

The other negative provisions of the Tax Act will be less detrimental to existing investments in real estate. The impact will be felt more on new investment. The new tax credits for low income housing will ameliorate the impact on new construction and rehabilitation of these units, but it will not offset the loss of preferences that existed before. The limitation on the amount of tax credits against taxes on non-passive income that a single taxpayer can take is especially detrimental because larger investments will require a large number of investors to take full advantage of the credits. Marketing small investment units is costly and will absorb much of the benefit.

Rehabilitation of existing structures will be substantially reduced with the reduction in tax credits and increased in the minimum qualifying age from 30 to 50 years. Renovation of older downtown areas will diminish as a direct result of this legislation.

The construction of apartment units and office buildings can be expected to decline until rents increase to a level to justify construction without the tax subsidies that existed before. This process will take longer where there is currently an excess supply that was produced in response to the previous incentives, primarily in Sun Belt cities.

The timing of the Tax Reform Act was fortuitous in that it occurred at a time when interest rates were falling. These falling rates were increasing the demand for real estate, and this increase in demand provided a shield for the detrimental effects on real estate values created by the tax reform.

Reducing tax rates makes some short-term real estate investments and dealer activities more attractive than before. The after-tax returns from income-producing real estate is also improved by the lower rates, but the lower rates also make the benefit of deducting interest expense less attractive. This also makes home ownership somewhat less attractive except for the fact that all other consumer interest deductions are being phased out so that home owners will be allowed to deduct consumer interest, and other taxpayers will not be allowed any consumer interest deductions.

On balance, one would expect the lower tax rates to make commercial real estate investments less attractive, but home ownership should be more attractive because the ability to deduct consumer interest will outweigh the reduced benefit from deducting mortgage interest.

The long-run future of real estate investments is good. The real estate industry has weathered many shocks before, and it will do so again. Shelter and space are valuable commodities that will always be in demand. The price rises and falls, reflecting the magnitude of benefits to ownership from the cash flows, appreciation, and tax benefits.

Falling tax benefits reduce market value and the rate of construction of new improvements. This in turn leads to larger cash flows as rents rise to reflect the reduced supply. Increased cash flows lead to appreciation in values and a renewed level of construction. The speed of correction depends on the level of excess supply at the time of the shock and the rate of growth in demand thereafter. The recovery rate will differ throughout the United States, depending on local conditions.

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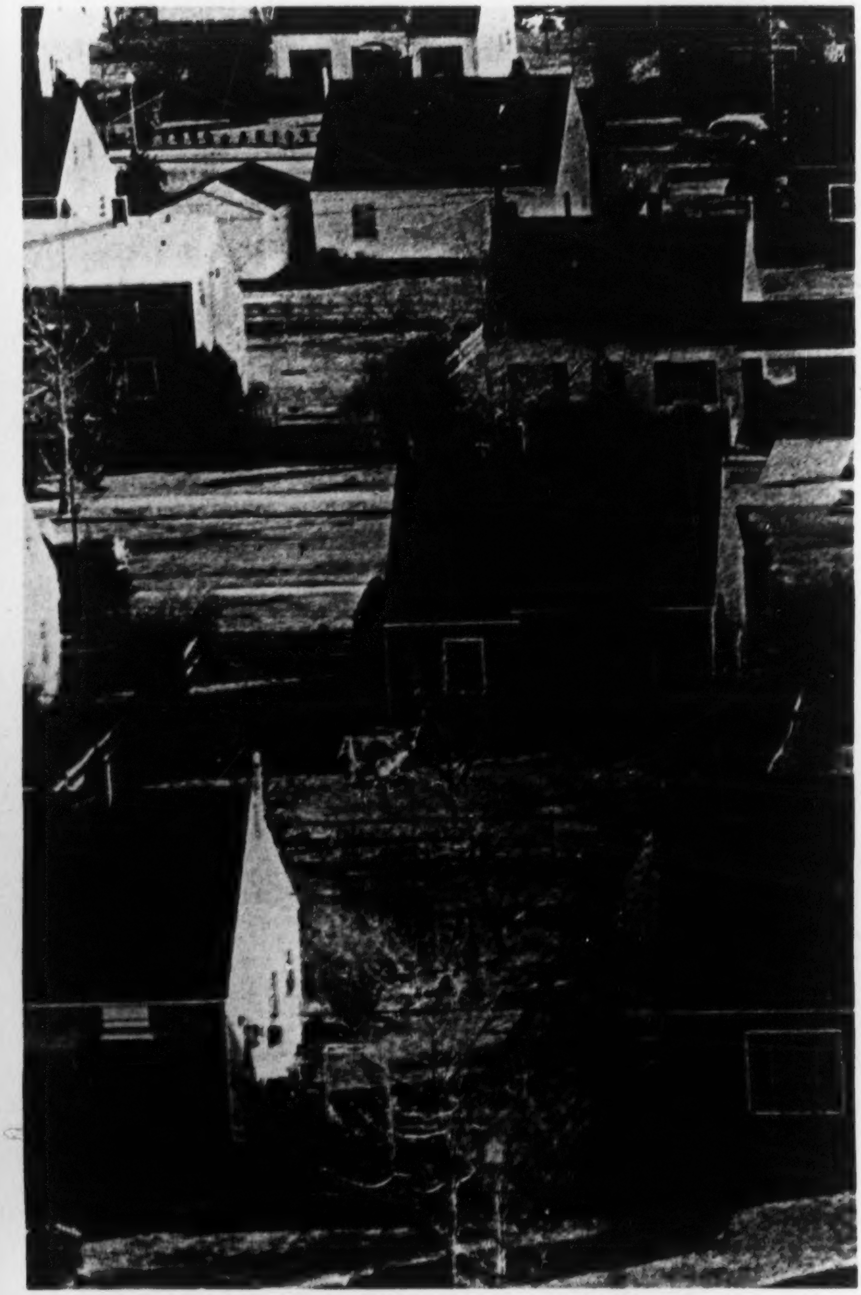
CURRENT TRENDS IN RESIDENTIAL HOUSING MARKETS

Frederick E. Flick



The economic recovery is now its fourth year, one of the longest recoveries in post-war history. Housing has played a major role in assisting the economy by providing the lowest interest rates this decade to create a favorable environment for homebuyers. The decline in interest rates over the past few years was due largely to sluggish growth, lower inflation expectations, and visible attempts by Congress to reduce the federal deficit.

In 1987, these factors, together with the effects of tax reform, will continue to provide a favorable outlook for interest rates, given the right policy mix. Therefore, for the housing industry, the role of government fiscal and monetary policy will be a crucial determinant of interest rates and, consequently, of home sales. However, in the longer term, the impact of policy toward federal housing and credit agencies will determine the future environment for housing markets and homeownership.

The Tax Reform Act of 1986 will add new uncertainties to the economic outlook. The basic philosophy behind the act was to cut both personal and corporate tax rates while expanding the tax base by limiting or repealing many personal and business deductions. The reduction in personal taxes is expected to encourage greater consumer spending eventually, but the increase in taxes on capital assets will discourage long-term investment. This favoritism toward consumption and away from investment

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will result in a significant loss in the economy's long-term growth potential.

The Outlook for the Residential Home Sales Market in 1987

Over the past year, the housing market has been one of the few bright spots in an otherwise sluggish economy. Mortgage rates on 30-year fixed loans are expected to continue to trend downward gradually through this year, averaging in the low 9 percent range. However, the outlook for sales markets will be mixed, with resales of existing homes and construction and sales of new following two distinct paths.

Existing homes should be sold at a healthy pace of nearly 3.62 million units this year – about a 1.6 percent increase over last year. Housing starts, on the other hand, are expected to decline about 10.5 percent in 1987, to about 1.648 million units. Most of this decline is expected in new construction of rental housing, but single-family starts will decline by about 3.7 percent from 1986.

The rate of appreciation of home prices in 1987 will also differ, depending on whether their homes are existing or new properties. The median price of existing homes should continue to outpace inflation this year, increasing by 4 percent to about $83,600. New homes, however, facing a tighter market, are expected to appreciate at about 3.2 percent, to a median value of $94,900.

As we all know, the last four years have seen substantially improved housing markets. In fact, 1986 was the best year for sales of existing homes since the late 1970s. From a market standpoint, the level of existing home sales in 1987 should be quite good. However, several factors should be considered as risks to this forecast. Mortgage interest rates, which are expected to remain low and even decline over part of the year, could cause problems if they increase as the result of some unpredictable economic or political event. Table 1 illustrates the outlook for the real estate and financial markets.

The Impact of Federal Tax Policy

The Tax Reform Act of 1986 (TRA) will be the single most influential factor on housing markets over an intermediate- to long-term time horizon. Other factors such as monetary policy, mortgage underwriting, or secondary market policies could affect markets substantially in the near term, but the recent changes in tax policy will alter long-term homebuying and investor behavior.

The Tax Reform Act of 1986 has lowered the marginal tax rates used to calculate tax liability and therefore lowered the value of any deduction. Furthermore, the act also restricts the use of deductions of mortgage interest payments for homes purchased or loans refinanced after August 15, 1986. Homeowners are now restricted to the deduction of the portion of their mortgage loans that covers the initial purchase price, plus the value of improvements to the home. The interest on additional borrowing above this "adjusted initial equity basis" is not deductible, unless the additional amount has been borrowed for educational or medical purposes.

The result of this new law is that the after-tax cost of owner-occupancy has been substantially increased for those households previously in the

TABLE 1

OUTLOOK FOR THE REAL ESTATE AND FINANCIAL MARKETS

	Actual		Forecast	
	1985	1986	1987	1988
Total Single-Family Home Sales (thous)	4,255	4,723	4,743	4,697
Percent Change Year Ago	8.2	11.0	0.4	-1.0
Existing Single-Family Home Sales (thous)	3,215	3,565	3,623	3,590
Percent Change Year Ago	12.1	10.9	1.6	-0.9
Dollar Volume (billions)	$291	$343	$355	$363
Total New Home Starts (thous)	1,741.3	1,841.3	1,648.4	1,617.8
Percent Change Year Ago	-1.2	5.7	-10.5	-1.9
Single-family Home Starts (thous)	1,072.5	1,199.1	1,154.6	1,141.5
Percent Change Year Ago	-2.5	11.8	-3.7	-1.1
Muiti-family Home Starts (thous)	668.8	642.3	493.8	476.3
Percent Change Year Ago	0.9	-4.0	-23.1	-3.5
New Single-Family Home Sales (thous)	689	745	671	665
Percent Change Year Ago	8.2	8.1	-9.9	-0.9
Median Existing Home Price (thous)	$75.5	$80.3	$83.6	$86.9
Percent Change Year Ago	4.4	6.4	4.1	3.9
Median New Home Price (thous)	$84.3	$92.0	$94.9	$97.7
Percent Change Year Ago	5.4	9.1	3.2	3.0
Real (inflation-adjusted) GNP				
Percent Change Year Ago	2.7	2.5	2.0	2.5
Mortgage Interest Rates (percent)				
30-Year Fixed-Rate	12.2	9.9	8.9	8.9
1-Year Adjustable-Rate	10.0	7.9	6.6	6.5

Source: "Outlook for the Economy and Real Estate," Forecasting and Policy Analysis Division, *National Association of Realtors*; Forecast produced using the Laurence H. Meyer & Associates, Ltd./Washington University Macro Model of the U.S. Economy.

30 percent to 50 percent marginal tax brackets. (The after-tax cost is equal to the mortgage payments plus property tax payments, minus tax savings from the deductibility of these payments, plus nondeductible insurance and maintenance). This law also makes it more desirable for homeowners to consolidate their nonhousing debt in a home equity loan, due to the elimination of deductions for consumer interest payments. To summarize these effects:

- The value of mortgage interest and property tax deductions will be significantly reduced, increasing the after-tax cost of homeownership for current and future homeowners
- The increase in these after-tax costs of homeownership are expected to depress home sales and values below what they otherwise would be
- The lengthening of depreciation periods, repeal of the capital gains exclusion, and restrictions on passive loss will make rental residential housing a less attractive investment
- These provisions will decrease the construction of new rental housing and cause rents to rise

Impact on Housing Costs and Home Values

Table 2 provides estimates of the typical percentage and dollar changes in after-tax homeownership and rental costs due to TRA. Under tax reform, typical after-tax homeownership costs are estimated to increase from $6,992 to $8,295 per year – up $1,373, or 19.8 percent. Table 2 shows the impact of tax reform on annual after-tax homeownership costs.

An increase in the after-tax cost of owning a home, whether due to an increase in mortgage interest rates or to a change in tax laws, other things equal, will cause the market price of residential structures to decline. Table 3 shows that in the $75,000 to $100,000 price range, which represents the bulk of all owner-occupied homes, values could fall 8 to 10 percent below what they otherwise would be.

Macroeconomic Impacts on Housing Markets

The Tax Reform Act of 1986 represents a substantial revision of the federal tax code, and as such will force the U.S. economy into an extended period of transition that could mean slower growth relative to what would be expected without tax reform. These changes are expected to shift the economy's spending away from investment purposes and into consumption, robbing the economy of some potential long-term growth.

The Washington University Macro Model, furnished by Laurence H. Meyer & Associates, Ltd., was used to simulate 1987 and 1988 economic impacts *with and without* TRA. In these simulations, the January 1987 baseline forecast for the U.S. economy was adjusted to re-incorporate the old tax laws. Then the adjusted model was simulated and

TABLE 2

SIMPLIFIED EXAMPLE OF THE IMPACT OF TAX REFORM ON ANNUAL AFTER-TAX HOMEOWNERSHIP COSTS

	Prior Law	Tax Reform Act of 1986
Before-tax homeownership costs		
Mortgage interest	$ 8,000	$ 8,000
Property taxes	1,230	1,230
Total	9,230	9,230
Itemized Deductions		
Homeownership Deductions		
Mortgage interest	8,000	8,000
Property taxes	1,230	1,230
Non-homeownership Deductions	3,670	2,000
Subtotal	12,900	11,230
Less: ZBA	3,670	5,000
Total Itemized Deductions	9,230	6,230
Homeownership Tax Savings	x .25	x .15
	2,308	935
After-Tax Homeownership Cost	6,922	8,295
Change: Dollars	--	+1,373
Percent	--	+19.8

Note: Assumes a $100,000 home with a 20 percent downpayment and an $80,000 mortgage with 10 percent interest rate and a 30-year term. Property taxes are assumed to be 1.23 percent of the home value, the nationwide average for single-family homes.

TABLE 3

POTENTIAL DECLINE IN HOME VALUES DUE TO TAX REFORM (Mortgage Rates Unchanged)

Home Price	Decline in Value: Dollars	Decline in Value: Percent
$ 50,000	-$ 2,722	- 5.4
75,000	- 6,320	- 8.4
100,000	- 10,068	-10.1
150,000	- 16,097	-10.7
200,000	- 11,883	- 5.9

the results were compared to the original baseline forecast. This latter simulation presents an alternative growth path the economy might follow if tax reform had been removed as of January 1, 1987. The results presented in Table 4 suggest that housing markets were expected to be substantially more robust without the imposition of tax reform. These results show the following:

- Housing starts would show solid gains without tax reform. Multi-family housing starts, in particular, rebound very strongly, mostly due to the fact that yields on these properties would return to levels that would attract investment funds
- Sales of existing homes, though expected to remain healthy despite the higher costs of homeownership due to the Act, respond well in the no-tax reform simulation. The simulation shows an additional 300,000 homes would be sold over a two-year period
- Mortgage rates would be unchanged in 1987 without TRA; although they would be 0.1 percent higher in 1988 without TRA
- Nonresidential investment also picks up somewhat because of the restoration of the investment tax credit

The Tax Reform Act of 1986 has clearly reduced incentives to invest in housing, particularly in multifamily rental project. There has been an abundance of predictions of declines in single-family and multifamily starts, and even for new and existing residential sales. However, there is good evidence that multifamily residential and commercial real estate have already reacted negatively to the new law.

The demand for mortgage credit for real estate development over the next few years is expected to decrease substantially as a result of the changes in the tax laws affecting rental and commercial real estate. These changes include the lowering of marginal tax rates, the lengthening of the depreciable life of investment real estate assets, the elimination of accelerated depreciation, and restrictions on the ability to use real estate tax losses to offset non-real estate income. These changes, in addition to the already abundant oversupply of investment real estate space, will reduce the tax-oriented investors' demand for real estate assets.

A General Assessment of the Impact on Real Estate Markets

Owner-occupied housing has retained most of its tax advantages at a time when many alternative tax shelters have been eliminated. Consequently, the short-run demand for owner-occupied homes as a result of the tax law changes should not be adversely affected. However, over time, the increase in the after-tax price of housing will, in the absence of compensating factors, decrease the demand for owner-occupied units, especially move-up homes. This situation will tend to lower relative house prices or at least the rate of appreciation that would have occurred in the absence of tax reform.

Nevertheless, we are still not sure what the levels of the intermediate term impacts of tax reform will be. These effects probably will not begin to be felt until people fill out their first "new" 1040 in 1988. Furthermore, we know that historically, households adjust their consumption of housing only slowly in response to changes in employment or family status. Thus, it may take up to ten years for the complete adjustment process to occur. Unfortunately for housing analysts, since "other factors" are sure to intervene, we may never be able to accurately measure the "true" impacts of tax reform.

On the positive side, the Tax Reform Act of 1986 will improve

TABLE 4

ESTIMATED HOUSING MARKET IMPACTS WITHOUT ENACTMENT OF THE TAX REFORM ACT OF 1986*

(Percent Change from Baseline Unless Otherwise Noted)

	1987	1988
Total Housing Starts (thous of units)	182.5	199.3
Percent Change	11.4	12.1
Single-family	68.6	70.3
Percent Change	6.2	6.1
Multi-family	113.9	128.9
Percent Change	23.0	25.7
Existing Home Sales (thous of units)	140	150
Mortgage Rate (percentage points)	0.0	0.1
Non-residential Investment		
Equipment	3.5	10.1
Structures	2.7	7.9

***Assumes no changes in monetary policy from the baseline.**

Source: *National Association of Realtors*; **simulation produced using the Washington Universty Macro Model, furnished by Laurence H. Meyer & Associates, Ltd.**

the real estate market's accessibility to mortgage funds because it allows the introduction of Real Estate Mortgage Investment Conduits (REMICs). REMICs are tax-efficient versions of Collateralized Mortgage Obligations (CMOs), in that REMICs will enable mortgage debt obligations to be structured in ways that will broaden their appeal to capital market sources. The use of REMICs will increase the supply of credit to commercial and residential markets. Furthermore, alternative mortgage instruments will be able to be sold to the secondary mortgage market through the use of REMIC securities. Thus, it is possible that lenders will experiment with new types of mortgage products.

This increase in the supply of credit will be slightly offset by the decrease in the incentives for savings and loan associations (S&Ls) to hold a large portion of their portfolios in mortgages. The tax act reduces the bad debt reserve provision in the old tax structure. As a result, savings and loans will be more likely to diversify their portfolios toward lower relative holdings of mortgages and mortgage securities.

However, nontraditional mortgage investors are expected to increase their relative holdings of mortgage securities. This effect should outweigh the decrease in holdings by thrifts, so that the overall effects of the tax changes on thrifts should result in a net increase in the supply of mortgage credit.

The Problems of the Thrifts

Rising interest rates in the late 1970s and early 1980s were largely responsible for the problems facing the S&L industry. Higher rates increased the cost of short-term funds, the S&Ls' traditional source of lendable capital, relative to income from long-term, fixed-rate mortgage loans. However, by 1984 many of the impediments to a healthy thrift industry had been removed through deregulation of interest rates and the granting of new banking and business powers to thrifts.

Unfortunately, these institutions, unaccustomed to the new environment, did not adjust soon enough to deregulation and were further affected by the devastating recession in the early 1980s. Many of these institutions are still troubled, despite the housing recovery which started in 1983 and the sharp plunge in interest rates in 1986. Currently, there is a large number of weak thrifts, which under more normal circumstances would be either merged or liquidated. However, due to the lack of adequate FSLIC monetary reserves, these institutions must continue to operate. A recapitalization plan created to provide funds for dealing with these problem thrifts is currently under review by Congress. Expectations for passage of a FSLIC recapitalization plan are high for 1987.

The Future Impacts of Housing Finance

The housing finance industry is currently undergoing a period of transition brought about by technological change, deregulation of the financial markets, changing consumer demands, and shifting federal priorities.

During the last 15 years, technological change in the methods used to produce and distribute credit in U.S. mortgage markets has been both extraordinarily rapid and exceedingly wide-ranging. Innovations have occurred in the features in mortgage contracts (i.e., investor "call protection," etc.), and in the location and nature of activities undertaken by contracting parties and their agents. The common effect of these developments has been as follows:

- Decentralization of the functions or originating, servicing, and funding mortgage loans
- An extension of the range of players competing to perform each function
- Increases in the transactional efficiency of mortgage markets, reducing some of the cost and risk of taking positions in mortgage instruments

These factors have lowered the costs of mortgage contracting and narrowed the spread between mortgage interest rates and yields on Treasury and corporate bonds of similar duration. They have also changed the location and participants in the individual mortgage lending submarkets. The net effect has been to allow lenders to tailor portfolio risks and allow borrowers to negotiate the price of these different mortgage options.

One result of these changes has been to force savings and loan associations, the traditional originators of residential mortgage loans, to restructure the way they do business. Many S&Ls are in financial distress due, in part, to undercapitalization but also because of failure to modernize their business practices. Moreover, large corporations (GEMAC, Metropolitan Life, Owens-Illinois, Sears, etc.) are entering the residential finance market because they see opportunities for profit, thus increasing the pressures on thrifts. Thus, the real estate finance industry will continue to be reshaped by market forces outside the regulatory and legislative arenas.

Securitization of Mortgage Loans

The secondary mortgage market has experienced explosive growth in the 1980s. Thrifts have found that mortgage-backed securities (MBSs) have made loan portfolios more liquid, allowing lenders to sell to a widening group of investors – including pension funds, insurance companies, and other thrifts. MBSs also have proved to be a valuable cash management tool. They can be used as collateral for reverse repurchase agreements, CMOs, interest rate swaps, and other transactions in which unsecuritized portfolio loans are not acceptable.

The trend towards increased use of the secondary mortgage market was given a significant boost with the sharp decline in mortgage interest rates in 1986. Two factors at work which sharply increased mortgage securitization were the surge in mortgage originations and the retirement (prepayment) of existing loans and securities due to refinancing. In 1986, a record high 66 percent of all new originations were securitized by an ever broader array of primary and secondary market participants. Total issuance of pass-through securities in 1986 was $262.3 billion, more than twice the $110.5 billion securitized in 1985.

The first-generation MBSs come in two varieties: (a) straight bonds, whose obligations are securitized by a pool of mortgages (e.g., FNMA debt or mortgage-backed bonds); and (b) pass-through PCs, in which the cash flows generated by the pool are passed on to the security holder. However, investors demanded a form of MBS which was designed to permit different investors to take claim to the early or late cash flows generated by the pool of mortgages serving as collateral. The Collateralized Mortgage Obligation (CMO) was the second generation mortgage-backed security. Issuance of CMO debt tripled from $16.8 billion in 1985 to $48.2 billion in 1986.

Despite strong investor demand, development of the CMO market was constrained by IRS regulation. However, the Tax Reform Act of 1986 created a third-generation security called a Real Estate Mortgage Investment Conduit (REMIC), which removed federal tax law obstacles that had prevented issuers and investors in residential and commercial MBSs from achieving the best economic, regulatory and accounting results.

The Future of the Residential Home Sales Business

In recent years there have been strong economic and organizational forces attempting to integrate the marketing and sale of real estate and financial services. The movement of major retailers such as Sears, K-Mart, and J.C. Penney's into real estate and financial services are the most compelling examples. Furthermore, the increased sophistication of marketers attempting to use "point-of-sale" techniques for bundling financial and real estate services has been driving this perceived trend.

Computer technology has made great strides in providing technical support of the sales process through computerization of Multiple Listing Services and even financing through the listing of available mortgage products. In some cases, video cassettes have been used to market areas and properties.

Many "high-tech" pundits have predicted the growth of firms that would fully integrate real estate brokerage, mortgage lending, insurance, and other financial services into a single vending unit. This prediction has given rise to speculation that the number of independent practitioners in the residential brokerage field would necessarily have to decline. However, this conclusion seems premature, and the predicted growth of integrated firms could encounter substantial difficulties because of some very basic characteristics of products and sales people.

Although the Tax Reform Act may slightly depress housing activity, the resident owner-occupied market should remain strong over the next couple of years.

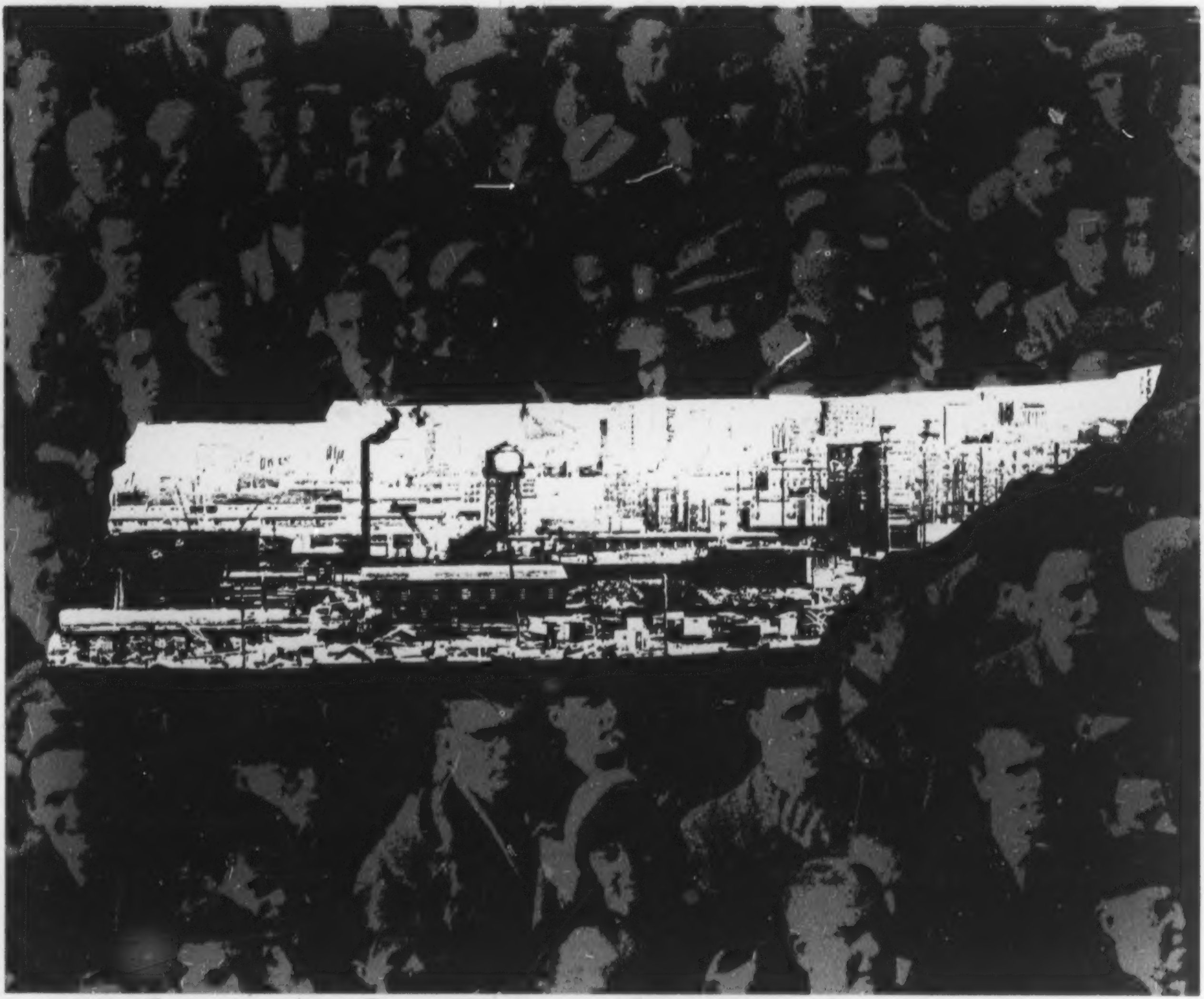
Buying a home involves making complicated choices regarding lifestyle, ranging from the neighborhood ambience to specifics of the lot and the housing unit itself. Housing units and neighborhoods must be "shown" to buyers by salespeople. The process of assisting a buyer to find the "right" home intrinsically involves "one-on-one" personal selling skills, and brokers and agents must have a very good understanding of the buyer's (or seller's) needs in order to be successful. This suggests that it will be very difficult to utilize high-tech solutions to the home buying and selling process. Consequently, there seems to be plenty of room for the small broker who provides the personal sales touch and specializes in certain submarkets within local areas.

Financial services are inherently less personal and require different types of sales approaches. People who sell by showing homes are not the same types who sit behind desks in banks, thrifts, and insurance companies. Thus, we are probably not likely to see realtors who also "hock" insurance, mortgages, and money market funds. Furthermore, it is not necessarily true that putting real estate agents under the same roof or company with insurance salesmen will lead to profitable "cross-selling." Many consumers like the specialized "boutique" and feel that knowledge and product quality are lower when services are mixed.

The economic factors that will be affecting residential real estate in the near future are generally favorable. Although the Tax Reform Act of 1986 may slightly depress housing activity below what it would have been otherwise, the residential owner-occupied market should remain strong over the next couple of years.

The major trend in the 1980s in mortgage financing has been the opening of investor markets for securitization of loans. Even the Tax Reform Act of 1986 provided impetus to this trend. Thus, it appears that the problems of geographical fund mismatches as well as general access to a sufficient aggregate volume of mortgage financing have been overcome. Of course, when the general level of interest rates rises, mortgage rates will similarly increase so that the yield spread over comparable maturity assets provides sufficient compensation to mortgage investors for the risk. However, it is impossible that the mortgage financing pipeline can ever become so large as to push mortgage rates very close to yields on long-term U.S. securities unless investors' perceptions of the relative risk of these assets were to change dramatically. Nevertheless, there appear to be few threats to the availability of mortgage finance over the long term.

In terms of the future of the residential real estate brokerage industry, applications of computer and information technology will probably improve the productivity of real estate sales personnel. However, it is not clear that this technology will be able to "revolutionize" the basic art of real estate brokerage and sales. While the "one-step shopping" concept is alluring, especially to technically trained observers of the scene, it is not clear at this point whether it will totally reshape the way homes are sold, financed, or insured. The solutions to this problem will be very sensitive to the size, structure, and management style of the firm.



Analyzing the Transformation of Tennessee's Economic Geography

Charles L. Leven

There is good news and bad news about the Tennessee economy. The bad news is that America's 20th Century industrial development came late to Tennessee. The good news is that the state has adjusted much better to obsolescent industrial facilities than the "Rustbelt" states of the Northeast and Midwest.

And even better news is that much of the needed transformation has already occurred.

Although industrial development is an effective way to provide high wage jobs while producing goods that are likely to bring new money into the economy, recent developments in North American and European economies contain an important lesson in that regard: while manufacturing output has continued to grow, the percent of the U.S. workforce in manufacturing has declined steadily since 1950 and since 1980 has declined in absolute numbers, from 21.2 million to 19.3 million in 1984.

Tennessee Trends

As a newer-than average industrializing state, Tennessee has shown somewhat different trends. In terms of total employment, except in 1970 (see Table 1), manufacturing workers have increased as a percent of Tennessee's labor force, in contrast to manufacturing's generally diminishing share of employment in the U.S. Thus, by 1980 Tennessee had a larger fraction of manufacturing workers than the U.S. share. In terms of "urban private employment," Tennessee's performance is even more impressive. In this category manufacturing workers have represented a larger fraction of the total than in the U.S. since 1960. However, the peak percentage occurred in Tennessee in 1970 and since then has been declining. As in the U.S., this has meant an absolute decline in manufacturing workers since 1980 from 511,000 to 484,000 in 1984.

Since the state still has somewhat lower-than-average labor costs and newer-than-average industrial plants, we should expect that for some time manufacturing employment may continue as a higher fraction of total or urban private employment than in the U.S. But with rising real income, comparative wage rates will rise, and existing plants will get older; and while new industries may come to Tennessee, they are likely to be much more capital- and information-intensive, so that labor-output ratios will fall. As noted, the Tennessee economy already has begun to adjust to these trends, and it will not be exempt from further adjustment. Industrial employment in labor-intensive technologies increasingly has been transferred to Third World countries, and even there, with greater time lags, labor-output ratios will fall and eventually employment will fall as well.

Effects of Technology

It is important to note that the change in economic structure faced by the developed world is dramatic and substantial. Its order of magnitude is akin to that of the Industrial Revolution itself; but instead of being based on steam and electric power and the internal combustion engine, it is based on the new information capability made possible by the microcomputer chip and on the fall in communication costs stemming from related technologies. The most significant aspect of the new information technology is *not* in its ability to perform millions of calculations in micro-seconds; rather, the significance lies in its ability to store vast amounts of information at low cost in easily retrievable form (and easily retrievable, moreover, at locations remote from its point of input and under conditions where the cost of access to it largely is independent of distance from it). Citibank, South Dakota is an extreme example. As a world center for VISA records, Citibank could have been located almost anywhere at the end of a telephone line; it is located in South Dakota simply because South Dakota offered the kind of labor and facilities needed at low cost.

Low-Cost Information

Even more important, the availability of low-cost information at remote locations, coupled with industrial robotization, means that many of the steps in an ordinary production process can now be controlled and/or operated from distant locations. In the end, overall increases in labor productivity are achieved, but not all plants experience the doubling or tripling that appears to be the case at Chrysler in the U.S. or Jaguar in the U.K., if we look only at on-site labor. Much of what really has happened is the substitution of off-site (robot designers and programmers) for on-site workers (assemblers).

Closely related is the increasing ease with which manufacturers can out-source component assembly or steps in the production chair. An extreme example is the rapid success of Benetton, the Italian apparel merchandiser. Benetton clothes are sold in thousands of retail outlets worldwide at competitive prices, with up-to-the-minute style and color selection. But the company owns almost none of the retail outlets and only a small fraction of the production capacity. The secret of their success is quality control in distribution as well as production and adjustment of their colors and styles in response to continuous monitoring of what is selling where. This process means lower inventory cost, since the final stages of production (color for example), may be contracted for often only days before intended sale. The mainspring that drives this system is massive amounts of readily retrievable information.

TABLE 1

TRENDS IN EMPLOYMENT STRUCTURE
TENNESSEE AND THE UNITED STATES
(Percent)

	Percent of Total Employment in Manufacturing		Percent of Urban Private Employment in Manufacturing[a]	
	United States	Tennessee	United States	Tennessee
1950	25.9	21.1	43.7[b]	43.1[b]
1960	27.1	26.0	39.4[c]	41.8[c]
1970	26.0	23.0	35.0	42.1
1980	22.4	27.0	28.8	35.8
1984	--	--	25.2	32.5

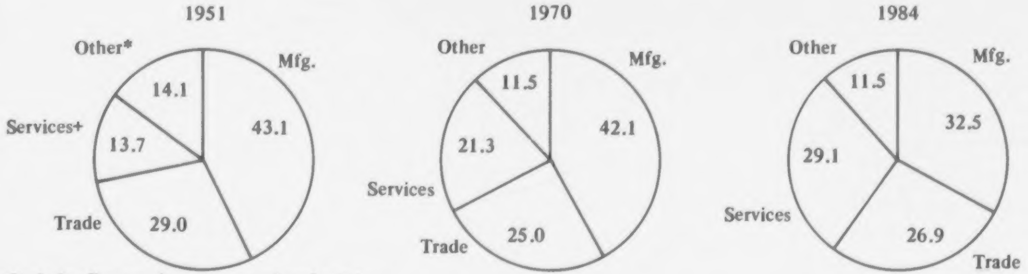
a. Excludes agriculture, mining, and government

b. 1951

c. 1959

Source: U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*.

FIGURE 1
URBAN PRIVATE EMPLOYMENT IN TENNESSEE



+Includes finance, insurance, and real estate

*Transportation, communications, and public utilities, and construction

The Service Revolution

Part of the so-called "service revolution" is the substitution of services for goods in consumers' budgets as they become more affluent; but much more, it is a fundamental change in the way we produce goods. One of the most important consequences of information-intensive or "post-industrial" production is that large numbers of workers no longer have to be assembled at the same place at the same time in order to cooperate in the production of a good. And since many of the component "parts" or "inputs" have actually become information, the advantage of their being produced near, rather than far from their point of input, has been substantially reduced. The results show up in the composition of Tennessee's employment relative to the U.S., as shown in Table 1, and it is apparent in changes within Tennessee over time. Note in Figure 1, for example, that at least in broad terms, virtually all of the change in the structure of urban private employment has been a substitution of service for manufacturing jobs.

Some observers lament this shift, viewing it as a substitution of low-wage, vulnerable, service jobs for high-wage, union-protected, manufacturing jobs. There is no denying that at least historically, average wages in manufacturing were higher than those in services, or that trade union membership was more widespread. But high wages can be supported only for fewer and fewer workers in manufacturing as their inputs increasingly become backed up by service inputs produced off-site by new kinds of service workers. Not even all the old, and certainly not all of the new service jobs are low wage. A number of rapidly growing service sectors based on information processing have relatively high human capital requirements and correspondingly high wage rates. In any event, per capita and median family income, after a few difficult years in the late 1970s, once again are rising overall, despite the continued decline in employment in manufacturing establishments.

Economic and Geographical Impacts

Another consequence of the new technology is its impact on the economic geography of a region. The main point, simply stated, is that if it is no longer as necessary to have workers contributing to a given product at the same place at the same time, or for firms producing inputs for other firms to be in close proximity. Much of the need for dense, large-scale urban communities, at least from their standpoint as locations for production, has disappeared, or at least sharply diminished. There is still a need for large-scale communities for consumption of a variety of public, private, and non-profit goods subject to substantial economies of scale in consumption as well as production: goods as diverse as symphonies and live theater, antique markets and ethnic restaurants, professional and technological training, and regional medical services. But exploiting these kinds of advantages probably does not require extremes of scale nor does it require the same degree of high residential density once typical of the traditional Industrial City.

Unlike daily commutation to a factory, the travel for service and consumption trips takes place only now and then, and much of it can take place electronically. White-collar service workers also have less need to be near each other, so they have increased opportunities for working at remote locations, even from their homes, telecommuting by personal computer. But if they get together somewhat less on a daily basis, they seem to be getting together more on a larger scale, on a much less frequent basis. Witness the explosion of business travel, conventions, and conferences.

A New Geography

So we should expect to see a new geography emerging wherein metropolitan communities have much greater geographic extent without much greater population scale, and with fairly high local area or "neighborhood" densities, but with neighborhoods themselves somewhat discontinuous in space. The in-between spaces will be filled with the more intensive land-using activities that nonetheless will be increasingly internal to metropolitan communities: i.e., farms and forests, open space, and theme parks. As a corollary, almost everything and everyone will be within a reasonably easy commute, if not

In 1984, over 85 percent of Tennesseans were metropolitans, 35 percent in central cities of SMAs, 30 percent in their suburbs, and 21 percent in their exurbs.

actually within an Standard Metropolitan Area (SMA). In fact, using the Census definitions of "central city" and "suburban," and defining "ex-urban" (within easy reach of an SMA center for irregular commuting) as the counties abutting SMAs, we find (see Table 2) that in 1984, over 85 percent of Tennesseans were metropolitans (not necessarily urbanites), 35 percent in central cities of SMAs, 30 percent in their suburbs, and 21 percent in their exurbs.

If we define as "large," "medium," and "small" SMAs those that nationally are in the first quartile, the second quartile and the lower half of the size distribution of all SMAs, we see that in Tennessee the SMA population has shifted almost entirely from small- to medium-sized SMAs, but still has no large ones.

This is not a disadvantage, since it is the large SMAs that recently have exhibited the most resistance to growth nationally. Finally, outside of SMAs, "small-town" areas (those with county populations of 30,000 or more, i.e., "budding" metro areas), while shrinking in importance overall, have become much more important relative to rural areas, i.e., counties beyond SMA exurbs, but with populations of less than 30,000. At the beginning of this century rural areas, even this restrictively defined, accounted for over half the state's population.

Trends in Metropolitanization

And the metropolitanization of Tennessee's population dominates not only its functional distribution as shown in Table 2, but also its geography as shown in Maps 1 to 3, showing the spatial extent of SMAs and their exurbs in 1900, 1950, and 1984. This geographic spread is not only extensive, it is

TABLE 2

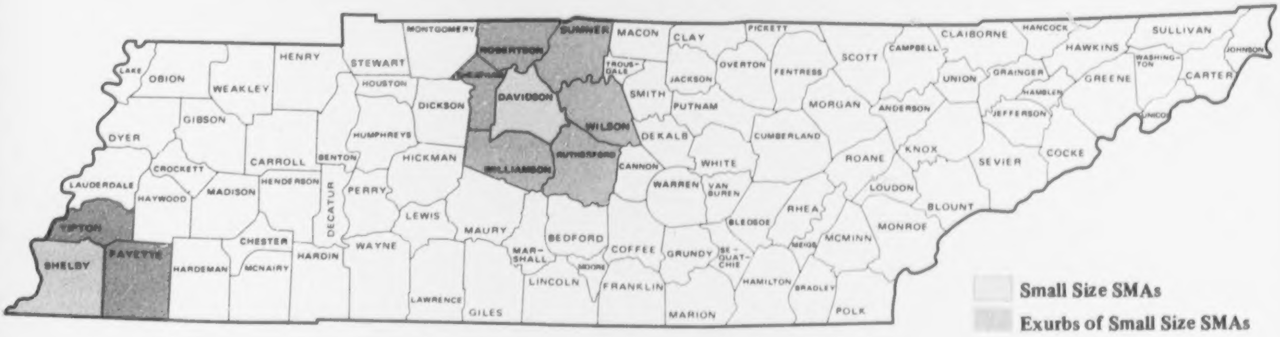
TENNESSEE'S POPULATION STRUCTURE
(Percent)

	1900	1910	1920	1930	1940	1950	1960	1970	1980	1984
Central cities:	9.1	11.1	17.8	24.2	24.0	25.1	25.6	34.5	35.2	35.3
Medium-Size SMAs	--	--	–	9.7	10.0	15.8	14.0	27.0	28.1	34.1
Small-Size SMAs	9.1	11.1	17.8	14.5	14.0	9.3	11.6	7.5	7.1	1.2
Suburbs:	4.6	4.5	9.5	8.8	10.3	15.9	20.2	14.4	27.5	29.5
Medium-Size SMAs	--	--	–	2.0	2.2	9.1	3.6	5.2	18.3	28.9
Small-Size SMAs	4.6	4.5	9.5	6.8	8.1	6.8	16.6	9.2	9.2	0.6
Exurbs:	10.3	9.4	19.9	17.9	17.6	15.8	15.7	15.5	22.7	21.0
Medium-Size SMAs	--	–	–	2.2	2.0	8.2	1.5	6.0	13.2	18.7
Small-Size SMAs	10.3	9.4	19.9	15.7	15.6	7.6	14.2	9.5	9.5	2.3
Nonmetro:	76.0	75.0	52.8	49.2	48.1	43.2	38.5	35.6	14.6	14.2
Small-town areas	23.1	30.0	20.6	23.0	24.5	24.3	20.5	23.8	9.5	7.4
Rural areas	52.9	45.0	32.2	26.2	23.6	18.9	18.0	11.8	5.1	6.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports.*

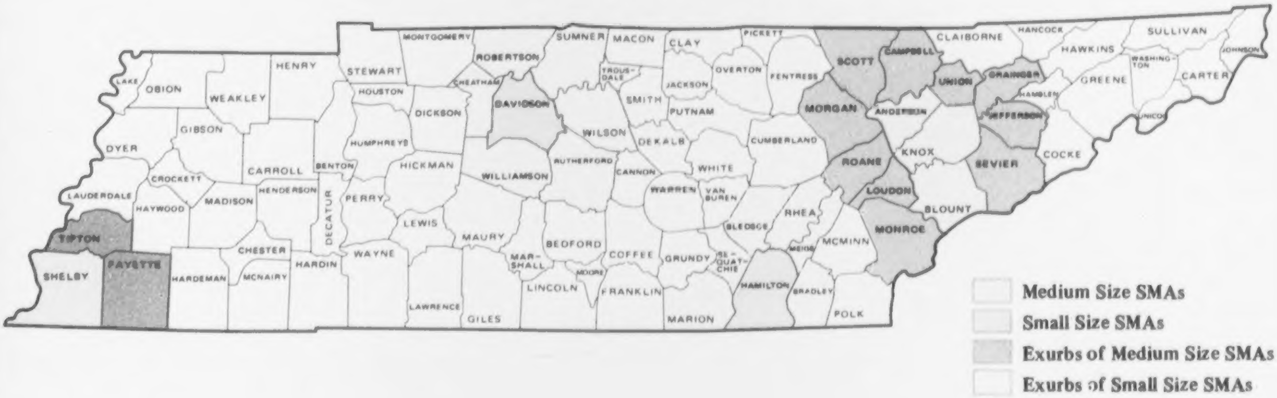
MAP 1

METROPOLITAN TENNESSEE 1900



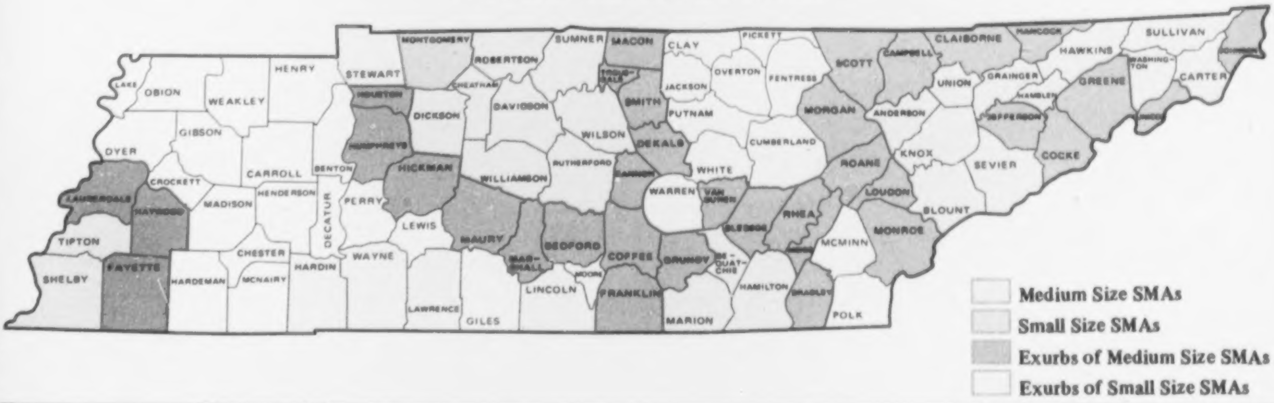
MAP 2

METROPOLITAN TENNESSEE 1950



MAP 3

METROPOLITAN TENNESSEE 1984



Up until 1970, Tennessee had a metropolitan structure that was consistently more conducive to growth than the East South Central region, but both regions had a less growth-prone structure than the U.S.

comparatively recent; much more extension took place in the 34 years between 1950 and 1984 than in the 50 years prior to 1950. However much we may think of Tennessee as symbolizing country culture, and however much that culture may really have been preserved, the fact is that it has moved mostly to the city, so that today the state has a very typical metropolitan geography. And within the post-1950 period, Table 2 shows how concentrated the conversion of nonmetropolitan areas into suburbs and exurbs was in the decade of the 1970s; there is not much more metropolitanizing to be done.

The trends in metropolitanization show up in recent population growth rates. Note in Table 3, for example, that except for the 1930s, when Tennessee was experiencing substantial Depression-related return migration, the 1970s were the first time in this century that Tennessee had a population growth rate greater than the nation's, despite the fact that it has outpaced the East South Central Census region (Alabama, Kentucky, Mississippi, and Tennessee) consistently since 1920. In addition, after 1980, largely reflecting the really rapid adjustment in the 1970s, both Tennessee and the East South Central region have eased back to growth rates well below the national average.

In any given period of time, a region's growth depends in part on whether it has a structure conducive to growth in terms of its having over-average representation in sectors growing rapidly nationally. In fact, we can calculate the growth it would have had if each of its sectors had grown at the same rate as in the nation as a whole. We would call that amount of growth its "share." If it had exactly the same sectoral composition as the nation, then its rate of growth based on that composition would exactly equal the national growth rate, or its share rate would have an index value of 100 relative to the U.S. Share rates for Tennessee and the East South Central region, based on the metropolitan sectors designated in Table 2, are shown in the first two columns of Table 4. A value of less than 100 means that the region had a metropolitan structure less conducive to growth than the national average. Note that up until 1970, Tennessee had a metropolitan structure that was consistently more conducive to growth than the East South Central region, but that both regions consistently had a less growth-prone structure than the U.S. This was especially true in the 1920s, when having big central cities (which both areas lacked) was a big advantage, and again in the 1950s, when big city suburbs were the focus of growth nationally.

The 1970s represent a very sharp change, with both areas going over 100, when growth shifted dramatically to smaller SMAs, exurbs in general and nonmetro areas. Tennessee was well represented in the first two of these three components, and the East South Central region in all three. But since 1980, metropolitan structure converged on the national average – sharply in the East South Central region, entirely in Tennessee.

TABLE 3

POPULATION GROWTH RATE
(Percent)

	Tennessee	East South Central	United States
1900-10	8.2	11.4	22.8
1910-20	7.3	5.8	15.0
1920-30	11.9	11.2	16.1
1930-40	11.4	9.0	7.3
1940-50	12.9	6.5	14.4
1950-60	8.4	5.0	18.4
1960-70	10.0	6.3	13.2
1970-80	15.8	13.7	10.7
1980-84*	6.8	6.2	10.1

*Rate per decade

Source: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*.

Shift Rates

Of course, actual growth typically will differ from that indicated by the share rate. It would be greater than predicted by the share rate where the region was particularly attractive, so excess (deficit) of actual growth over (under) share growth would be called "shift." The shift rate (amount of shift per thousand residents) is shown in the last two columns of Table 4.

Both Tennessee and the East South change in shift rate, especially when compared with consistently positive-shift regions like the West, the Mountain States, and West South Central or consistent negative shifters like New England and the Middle Atlantic States. Compared to East South Central, Tennessee remained attractive during the 1940s and 1950s. Its unattractiveness during the 1960s was smaller, and it has remained substantially more attractive since 1970.

TABLE 4

TENNESSEE AND EAST SOUTH CENTRAL
POPULATION SHIFT AND SHARE

	Share Rate (United States = 100)		Shift Rate (Per Thousand)	
	Tennessee	East South Central	Tennessee	East South Central
1900-10	88	86	-119	-81
1910-20	82	69	-50	-45
1920-30	68	62	+ 9	+12
1930-40	99	97	+43	+19
1940-50	85	70	+ 7	-36
1950-60	74	66	+53	-72
1960-70	85	77	-12	-39
1970-80	111	122	+39	+ 7
1980-84	100	105	+32*	+15*

*Rate per decade

Source: Computed from U.S. Census data.

TABLE 5

SHIFT RATES FOR METROPOLITAN, INDUSTRIAL AND
OCCUPATIONAL COMPOSITION
(Shift per Thousand)

	Metropolitan Shift	Industrial Shift	Occupational Shift
1950-60	+53	-36	-18
1960-70	-12	+40	+46
1970-80	+39	+70	+80
1980-84*	+32	+ 9	n.a.

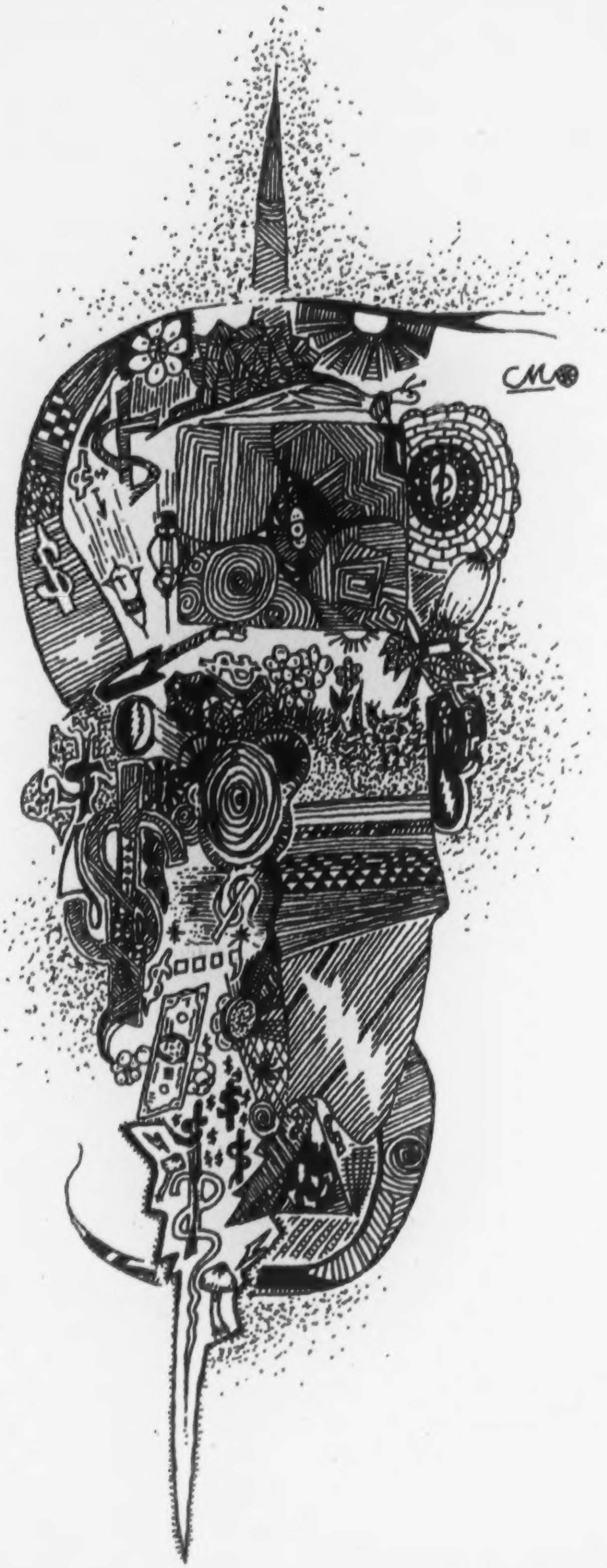
*Rate per decade

Source: Computed from U.S. Census data.

Shift rates could be computed with respect to other structural specifications than metropolitan structure. In the second and third columns of Table 5, shift rates are shown based on the excess of employment growth over the share that would have been expected based on industrial and occupational structures. Shift rates based on metropolitan structure reproduced from Table 4 are shown in the first column of Table 5 for comparison. In the 1950s Tennessee was doing much more poorly relative to its industrial and occupational structure than relative to its metropolitan structure. Part of the reason for this was the markedly unfavorable metropolitan structure indicated by a share index value of only 74 for that period. In the 1960s it was much more attractive industrially and occupationally than it was in terms of metro structure, but in the critical 1970s it showed up as strongly attractive in all three dimensions.

Summary

Tennessee's industrial attractiveness, while continuing positive, has very substantially tapered off since 1980. This should be seen as a natural consequence of convergence in regional industrial structures accompanying the transition to more information-intensive and less spatially-sensitive production processes. This trend should be expected to continue. No one is to blame – not greedy labor nor incompetent management nor inept public policy. It is simply an artifact of a post-industrial transition which, if understood and managed wisely, can be of benefit to the people of Tennessee as well as those of the nation. □



Income Tax Options for Tennessee

Stanley M. Chervin
David M. Mandy

For more than 20 years, the possibility of a state income tax has been debated periodically in Tennessee. Because there are compelling arguments both pro and con, this topic persists as a state policy issue.[1] The case for a state income tax was strengthened with the passage of the Tax Reform Act of 1986. Sales taxes are no longer deductible and are therefore more costly to taxpayers since none of the tax collected by the state is recouped by taxpayers from the federal government. However, since state income taxes remain deductible on federal tax returns, such a tax would enable taxpayers to pass some of the cost of operating the state government onto the federal government.

A stratified sample of almost 30,000 1984 Tennessee federal tax returns shows that the removal of the sales tax deduction in 1984 would have cost Tennesseans about $95.4 million. This translates into an average of $52.57 for every tax return filed by Tennesseans in 1984. In addition, since only about 16 percent of Tennesseans itemize deductions, and since the sales tax deduction could be claimed only by taxpayers who itemized, the average cost to those taxpayers would have been much higher, at $323.77. A similar analysis based on 1985 tax returns suggests that in 1989, after the Tax Reform Act of 1986 is fully implemented, the cost to Tennesseans of losing the sales tax deduction will be about $73.3 million annually, in constant 1985 dollars. This cost is less than the estimated Impact in 1984 because the Tax Reform Act provides for lower tax rates for many taxpayers.

Given the loss of the sales tax deduction, it is timely to consider the potential structure of a Tennessee income tax. Once the structure of the tax is specified, the incidence of such a tax on Tennesseans can be estimated.

A stratified sample of almost 30,000 1984 Tennessee federal tax returns shows that the removal of the sales tax deduction in 1984 would have cost Tennesseans about $95.4 million.

Defining the Tax Base

One of the first issues that arises is the difficult job of defining the income tax base. While the use of the federal tax base may be administratively desirable, potentially undesirable inequities can creep into a broad-based or general income tax.

For expository purposes, we will consider alternative tax structures which raise equal amounts of revenue for the state. The basis for these simulations is a stratified random sample of about 32,000 federal tax returns filed by Tennesseans for tax year 1985.

In fiscal year 1984-85, those states which imposed a broad-based income tax collected approximately 35 percent of their revenues from personal income taxes. In Tennessee, this percentage implies revenue of about $1.3 billion from a personal income tax in fiscal 1985-86. This number is used as the basis for analyzing various income tax scenarios. At 1985 levels, an income tax of this magnitude would permit a reduction in the state sales tax rate from 5.5 percent to 1.65 percent, with no change in aggregate state revenues. The analysis assumes that $1.3 billion must be raised, regardless of the actual details of the income tax. Therefore, any exclusions, exemptions, deductions, adjustments, credits, etc. that are considered must be offset by a higher income tax rate in order to raise the targeted amount.

Some types of income are not easily measured nor easily integrated into the sample data used here. This is an important shortcoming. Three major types of income are excluded from our analysis. social security retirement income, fringe benefits, and employer-provided private retirement or pension plans. To varying degrees these are also excluded from the federal income tax base.

Social security benefits. Social security benefits received by current retirees generally exceed their contributions and any reasonable imputed investment earnings accumulated during the working years. There is no compelling reason to exclude this surplus in a comprehensive measure of taxable income. The problem of measuring the proper surplus is difficult, since benefits received under the social security program are not as easily analyzed as benefits under a true retirement or pension program. However, a practical approach could require inclusion of 50 percent of total social security benefits in the tax base. This procedure would have added an estimated $1.4 billion to taxable income in Tennessee in 1985. Recent and planned increases in social security taxes will reduce and eventually eliminate the surplus for current workers. Therefore, the argument for including 50 percent of benefits in the tax base becomes less reasonable as time passes.

Fringe benefits. Fringe benefits constitute a sizable income supplement for some employees. Employer-provided life insurance, medical and hospitalization insurance, dental insurance, legal services, childcare, parking, discounts, and meals are all examples of fringe benefits. The dramatic growth in employer-provided fringe benefits has occurred primarily because of the exclusion of such benefits from the federal income tax base. In 1985, Tennesseans received an estimated $1.8 billion in fringe benefits exclusive of retirement programs. This situation creates an inequity in the tax system since employees who receive fringe benefits obtain part of their income essentially tax-free. There are two possible solutions. First, we can allow those not receiving fringe benefits to deduct personal outlays for such benefits from taxable income. Alternatively, we can require inclusion of the cost of such benefits in recipients' taxable incomes. However, both alternatives suffer from administrative complexity.

Retirement programs. Qualified retirement programs allow employers to deduct contributions to employee pension plans as business expenses and permit employees to exclude such contributions and earnings on past contributions from their income until paid out at retirement. The estimated 1985 value to Tennesseans of such employer contributions was $1.6 billion. It can be argued that while the exclusion is a current giveaway, it will eventually be taxed at retirement. This may be true under the federal income tax, but is not necessarily true for a state income tax. A retired worker can retire to a non-income tax state and avoid paying state income taxes on the tax-deferred income and earnings forever. If an income tax is intended as a method for charging residents for state services received while they actually reside in the state, then deferment may be inappropriate. Deferment provides current residents with the ability to shift current income into a never-to-be-taxed status.

Despite these shortcomings, the sample data provides valuable insight into the potential impact of alternative tax structures on various taxpayer categories. First, let us consider a tax which treats almost all sources of income as taxable income. This measure of taxable income is broader than the various income concepts used for purposes of federal tax administration and includes the following items:

1. Wages and salaries
2. Interest
3. Dividends

> *Certain adjustments to income, such as exemptions and deductions, are normally considered appropriate to arrive at a fair measure of a taxpaying unit's ability to pay taxes.*

4. Alimony received
5. Net business income (schedule C); losses limited to -$5000
6. 100 percent of long and short-term capital gains
7. Taxable pensions and annuity income
8. Taxable unemployment compensation
9. Taxable social security income
10. State income tax refunds
11. Net estate/trust income (or loss)
12. Net rent/royalty income, losses limited to -$5000
13. Net partnership/small corporation income; losses limited to -$5000

While this measure excludes most tax shelter losses, it also excludes real economic losses (in excess of the $5000 ceilings described above). However, this shortcoming does not materially affect the analysis. In 1985, this measure of Tennessee income was $45 billion, while Tennessee AGI (federal adjusted gross income) was only $37.6 billion. This tax base therefore exceeded AGI by $7.4 billion, or by 20 percent.

In 1985, the income tax rate necessary to replace 10 percent of sales tax revenues was 4 tenths of 1 percent. A flat-rate income tax of 2.89 percent on an income base of $45.0 billion would have produced the target value of $1.3 billion in tax receipts.

However, certain adjustments to income are normally considered appropriate to arrive at a fair measure of a taxpaying unit's ability to pay taxes. Two common adjustments are exemptions and deductions designed to recognize that a minimum amount of income is needed to finance basic necessities. The proper exemption level and standard deduction are subject to debate. The levels used in this analysis reflect those which will be in effect for tax year 1989 for federal tax purposes. The exemptions and standard deduction levels used appear reasonable in light of existing official household poverty income levels for various size households.

Exemptions and Standard Deductions

Figure 1 illustrates the effect of implementing these exemptions and deductions. The average tax rate is plotted for each major type of tax return across the initial broad measure of income. The rising rates reflect an increase in the marginal tax rate from 2.89 percent to 4.25 percent, which is required to maintain $1.3 billion in tax revenues. This large rate increase is needed to offset a reduction in the tax base from $45 billion to $30.6 billion caused by the use of exemptions and standard deductions. The horizontal line at 2.89 percent indicates the average tax rate for all taxpayers in the absence of exemptions and standard deductions. All of the lines shown in Figure 1 represent a flat rate tax. However, with part of a taxpayer's income removed from the tax base by exemptions and standard deductions, the *average* tax rate on all income varies across income levels. An upward sloping line at a particular income level indicates that the tax is progressive for the particular type of return at that income level. Note that deductions and exemptions have the effect of causing the flat-rate income tax to become progressive.

Low income taxpayers experience the most significant gain from the use of exemptions and standard deductions. The combination of the exemption and standard deduction moves most of the lowest income taxpayers into a zero taxable income status, thereby reducing their tax liability to zero. The primary losers are upper income taxpayers, especially single filers. These taxpayers benefit relatively little from the introduction of an exemption and standard deduction, and they are hardest hit by the tax rate increase from 2.89 percent to 4.25 percent. For married/joint filers with income in excess of $100,000 the tax increase is over $106 million. The break-even income level for single filers is about $17,000, while head of household filers break even at about $28,000 and married/joint filers at approximately $31,000.

To some degree, the introduction of exemptions and standard deductions offset the initial inequities introduced by excluding fringe benefits and pension contributions. Since the exclusion of these items from measured income disproportionately benefits upper income groups, the standard deduction and exemption adjustments illustrated in Figure 1 provide an imperfect equity adjustment for low income taxpayers. Note that these adjustments result in a progressive tax for all filers at all income levels.

An additional benefit of a standard deduction and exemption adjustment may be a reduced number of filers. This is both an administrative and taxpayer benefit. If a taxpayer with income below the combined exemption and standard deduction level is not required to file a return, the number of returns filed would be 500,000 less than the 1.9 million federal returns actually filed in 1985 by Tennesseans. Tax withholding tables would have to be properly adjusted to reflect the exemption and standard deduction to realize this administrative benefit.

Itemized Deductions

A second type of adjustment to the tax base is itemized deductions. The itemized deductions considered here are (1) home mortgage interest, (2) state income taxes, (3) local property taxes, (4) charitable contributions, and (5) medical expenses. While all of these deductions may not be desirable for a state income tax, they correspond to the deductions that the Tax Reform Act permits.

Allowing taxpayers to itemize deductions reduces the tax base to $29.5 billion from $30.6 billion and requires a rate increase to 4.41 percent to maintain tax revenues at $1.3 billion. Permitting itemized deductions in addition to standard deductions and exemptions has the most significant impact on head of household filers. Figure 2 illustrates average tax rates for head-of-household filers with and without itemized deductions. Head-of-household filers generally have low itemized deductions. Thus, they do not benefit significantly from these deductions. Therefore, nothing offsets the tax rate increase so that the average tax rate for upper income head of household filers is higher.

For married/joint and single taxpayers, the frequency of itemization increases as income increases and the average amount itemized increases as income increases. Thus, the average tax benefit from itemization rises noticeably as income increases. The clear winners in this simulation are itemizing single and married/joint taxpayers with incomes in excess of $40,000. The aggregate tax liability for these taxpayers decreases by a total of $5.5 million. The losers include most head-of-household filers, and low- and middle-income single and married/joint filers.

FIGURE 1. AVERAGE TAX RATES, INCLUDING EXEMPTIONS AND DEDUCTIONS

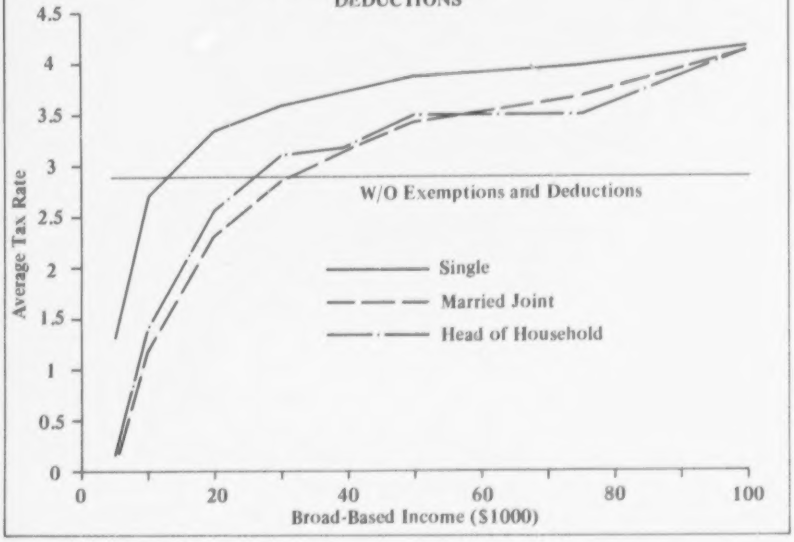
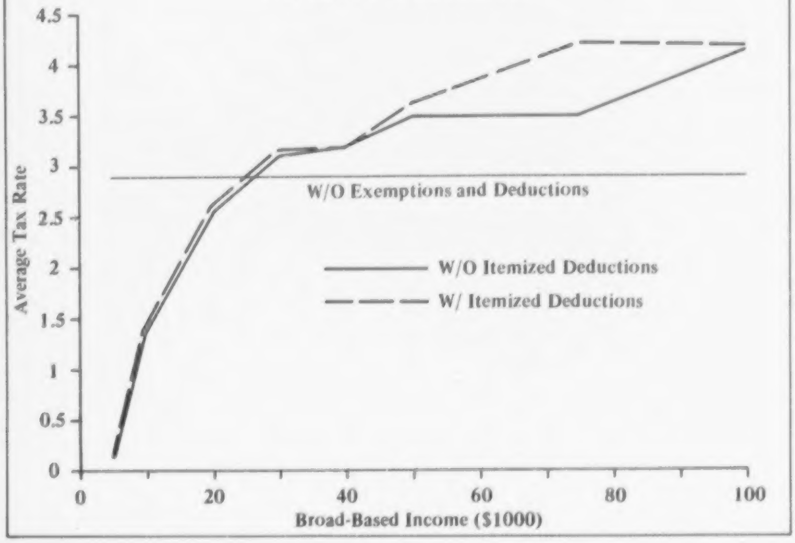


FIGURE 2. AVERAGE TAX RATES FOR HEADS OF HOUSEHOLD



IRA's

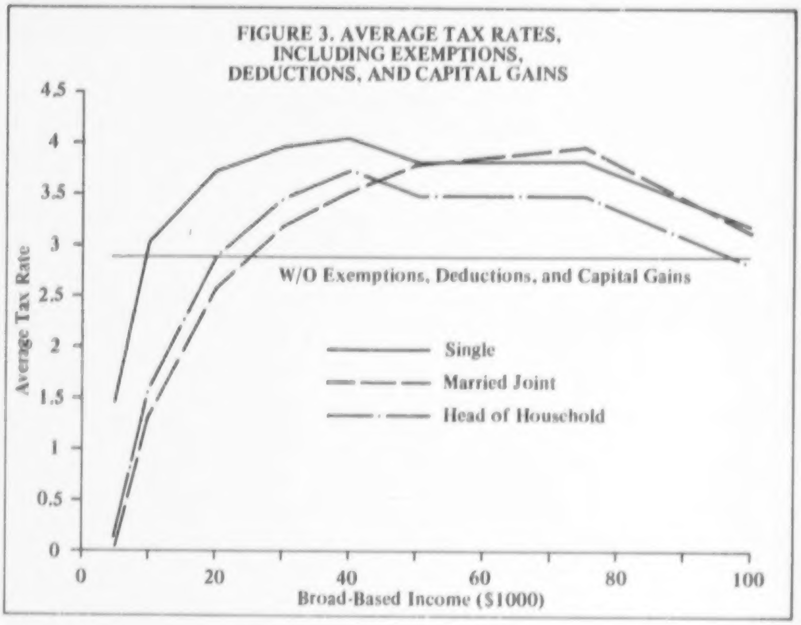
The simulation data permit consideration of several adjustments to the tax base which were reduced or eliminated by the Tax Reform Act. Two such federal adjustments are Individual Retirement Accounts (IRA) contributions and the capital gains exclusion. We consider each of these in turn in order to demonstrate the effect of such adjustments on a Tennessee income tax.

Taxpayers were first allowed to deduct contributions to IRA's on federal tax returns for tax year 1975. Only those not currently covered by a private or government retirement program were eligible. The purpose of the IRA deduction was to provide a tax break to employees who were not covered under a qualified private or government retirement plan. This deduction helped offset the inequity of the exclusion of contributions to pension plans from federal taxable income.

In 1982, the IRA rules were broadened to include active participants in qualified retirement plans. For tax year 1984, the maximum combined contributions was $4,000. As a result of this change, total IRA contributions grew dramatically. However, the Tax Reform Act of 1986 curtails IRA deductions for upper income taxpayers who are already covered under employer-paid pension programs.

Of all 1985 federal tax returns, married/joint returns accounted for 84 percent of total IRA deductions. Of this amount, 82 percent was claimed on returns with income in excess of

FIGURE 3. AVERAGE TAX RATES, INCLUDING EXEMPTIONS, DEDUCTIONS, AND CAPITAL GAINS



$30,000. This income category accounted for only 39 percent of total married/joint returns.

The IRA deduction, although generally available to all taxpayers, is a clear boon to upper-middle income married couples with two working members. The tax impact from its availability in the simulation (in addition to standard deductions and exemptions) is a reduction in taxable income from $30.6 billion to $30.0 billion and a required increase in the tax rate to 4.33 percent from 4.25 percent.

High income married/joint returns do not fare as well because of the $4,000 cap on such deductions. In the aggregate, single and head-of-household filers pay more in taxes, although the single largest group of losers is married/joint filers with income in excess of $100,000. The increased tax rate hits these high-income taxpayers hardest.

Capital Gains

The effects of one final major tax base adjustment are illustrated in Figure 3. The measure of taxable income used in Figures 1 and 2 included 100 percent of capital gains income. This type of income has traditionally been given a significant tax preference under federal law through an exclusion of 60 percent of capital gains income. However, the Tax Reform Act of 1986 ended this exclusion. Figure 3 displays the effect of retaining this exclusion on average tax rates. The 60 percent capital gains exclusion has a predictable effect. The tax benefits flow predominantly to wealthy households.

The overall impact of the exclusion is a reduction in taxable income from $30.6 billion to $27.0 billion. This reduction is larger than that caused by either itemized deductions or IRA deductions. The tax rate required to maintain the $1.3 billion revenue potential increases to 4.8 percent.

The winners include single returns with income in excess of $50,000, especially those with income in excess of $100,000 and married/joint returns with income in excess of $100,000. These taxpayers experience a combined aggregate tax reduction of $93.7 million. The losers include everyone else, especially married/joint returns with income between $20,000 and $75,000.

With the capital gains exclusion in place, average tax rates decline for single and head-of-household filers beginning at $50,000 income levels. The rates then decline again for all taxpayers for income over $70,000. Thus, the 60 percent capital gains exclusion makes the simulated income tax regressive at high income levels. Corresponding to this are higher average tax rates for all filing categories at income levels less than $50,000.

Conclusions

There are two major conclusions that can be drawn from this analysis. First, Tennesseans will lose approximately $73.3 million annually to the federal government simply through the loss of the sales tax deduction. This loss could be ameliorated if Tennessee adopted a broad-based revenue neutral income tax, since state income taxes remain deductible for federal tax purposes. A reduced sales tax will result in a decline in taxes paid by businesses and nonresidents of Tennessee. Thus, a revenue neutral change in Tennessee's tax structure could result in increased taxes for individual state taxpayers. The amount of the current sales tax ultimately paid by nonresidents of Tennessee is difficult to measure. Therefore, the net impact of these offsetting effects is questionable.

Secondly, the flat income tax rate required to raise a given amount of revenue rises dramatically as certain income items are excluded from the tax base. The most significant rate increase considered here resulted from the use of exemptions and standard deductions. Clearly, the choice of a tax base is a critical decision in the formation of a state income tax. If the tax base is narrowed, then the state must plan to raise less revenue with the tax or charge higher rates. Another effect of narrowing the tax base is that the income tax generally becomes progressive, even though flat rates are applied. The desirability of a progressive tax structure is another value judgement which must be addressed in the choice of a tax base.

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1. For a discussion of the pros and cons, see William F. Fox, "The Personal Income Tax as a Component of State Tax Structure," **Vanderbilt Law Review**, vol. 39, no. 4, pp. 1081-1095.

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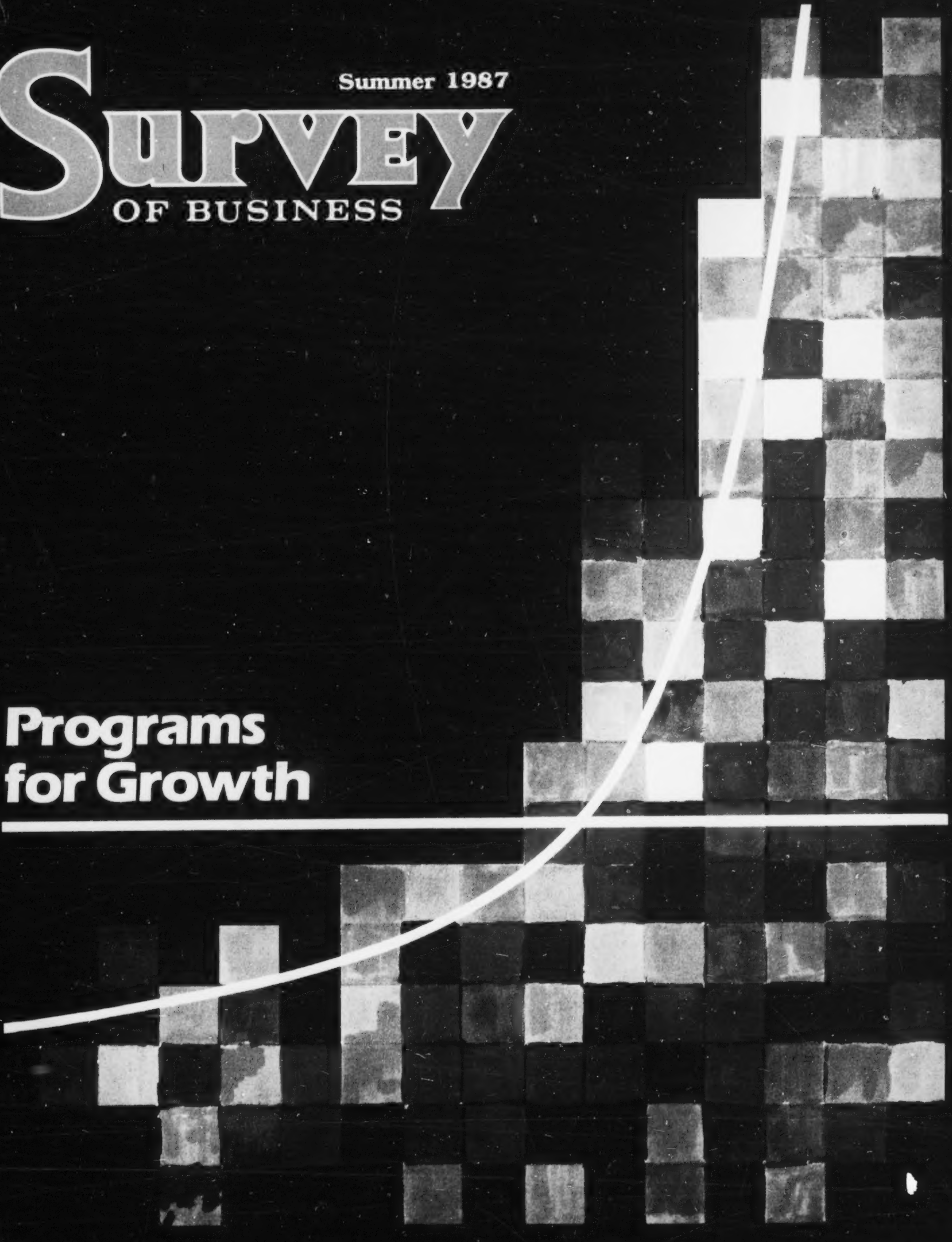

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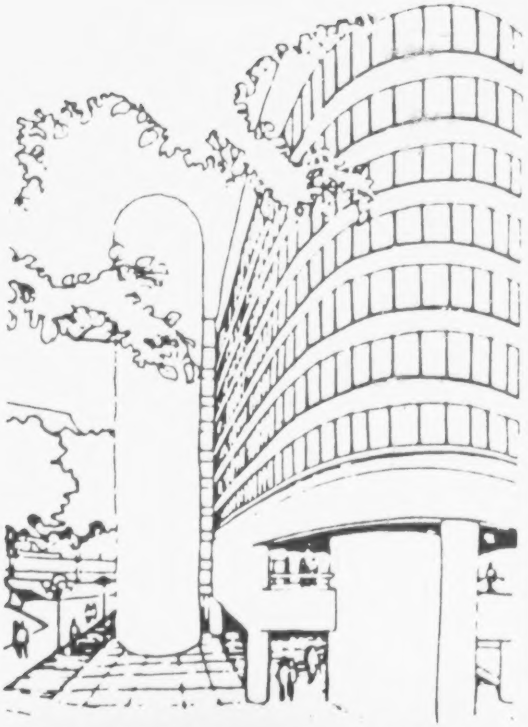

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A MESSAGE FROM THE GOVERNOR

Dear Friends:

Economic development is the top priority of Tennessee government. In a way, all the other things we do are related to providing the education, transportation, quality of life, and economic climate needed to get and keep good jobs in our state.

But creating jobs, prosperity and economic growth for our state is not always a matter of transplanting an existing business or industry into Tennessee. While we appreciate the investments in Tennessee made by firms from around the nation and world, we must also work hard to create new jobs ourselves. And the best resources we have to create jobs are our institutions of higher education.

Tennessee is leading the nation in the field of educational reform. We have emphasized improvements in the quality of instruction, provided financial incentives for our best teachers, are financing major increases in the overall salary of teachers, have raised standards for high school graduation, and were among the first states to require proficiency testing of all secondary school students. Results of these reforms have been dramatic. In 1985, Tennessee high school students for the first time exceeded the national average in standard achievement test scores.

We are also making exciting investments in our college and university system. One of the most innovative is the creation of Centers of Excellence. These Centers have been identified for special funding by the General Assembly because of their academic strength. From the Creative Arts Alliance at Austin Peay State University to the Science Alliance between The University of Tennessee and Oak Ridge National Laboratories, each of our Centers of Excellence has an important role to play in the state's economic development.

The MBA Center for New Venture Analysis at The University of Tennessee, Knoxville, will play a crucial and immediate role in stimulating the creation of new jobs in Tennessee. The program provides an integrated set of courses at the MBA level that allows students to concentrate on financing, marketing, management techniques and other factors that figure heavily in the success of new businesses. These courses are already attracting students from across the nation who have the vision and courage to make creation of new business ventures their goal.

Both the students and Tennessee benefit. As students in the MBA Center for New Venture Analysis leave the program to enter the workforce, many of them will directly contribute to creating new jobs by bringing their expertise to existing firms or by starting their own new ventures. As a businessman and entrepreneur, I know the impact new businesses can have on an area. They bring jobs, new payrolls, better standards of living and an improved quality of life for the community. New businesses are particularly important in some of the counties that have lagged behind the state in economic development. We currently have an aggressive program to build the infrastructure – roads, water and sewage treatment plants, and improved schools – needed to support new business in these depressed area.

The state is already working through the Department of Economic and Community Development on providing technical assistance to start-up ventures. We have created a prototype $5 million venture development fund that is available to provide venture capital in targeted areas. And we are encouraging creation of business incubation centers across Tennessee that will help new ventures through their first difficult years.

Our next step is development of a comprehensive state policy that will aid in creation of new businesses. We recently organized a task force of people from several agencies to compile and study the available data so we can make better decisions on the best ways to assist business start-ups.

We look forward in Tennessee to continuing and strengthening the strong partnership between government, education and business. Through better education, an improved infrastructure, comprehensive business development policies and the expertise provided by programs like the MBA Center for New Venture Analysis, we believe our best is yet to come in Tennessee!

Sincerely,

Ned McWherter

Ned McWherter, Governor

CONSULTING EDITORS' COMMENTS

In 1985 the Tennessee Higher Education Commission established a Center of Excellence in the College of Business Administration at the University of Tennessee, Knoxville. The mandate of the MBA Center for New Venture Analysis is to establish the highest quality programs possible in all phases of studying, understanding, and teaching about the venture creation and management process. This is a challenging mandate which calls for the concerted efforts of industry, government, administrators, faculty, and students.

This issue of the **Survey** is devoted to conveying a sense of the depth and breadth of UTK's commitment to establishing a nationally-recognized leadership role in the education of entrepreneurs. In the pages which follow, coverage is given to topics ranging from the faculty's shared philosophy of entrepreneurial education to descriptions of faculty research on various aspects of new ventures. In addition, Governor Ned McWherter, administrators including Dean C. Warren Neel and Associate Dean Roger L. Jenkins, and outstanding business leaders offer their perspectives on and evaluations of our programs.

Obviously, those involved in new ventures create a diverse group covering a broad range of activities. We think this is the way it should be, and we're proud of the strong, but still growing, interest in entrepreneurship here at UTK.

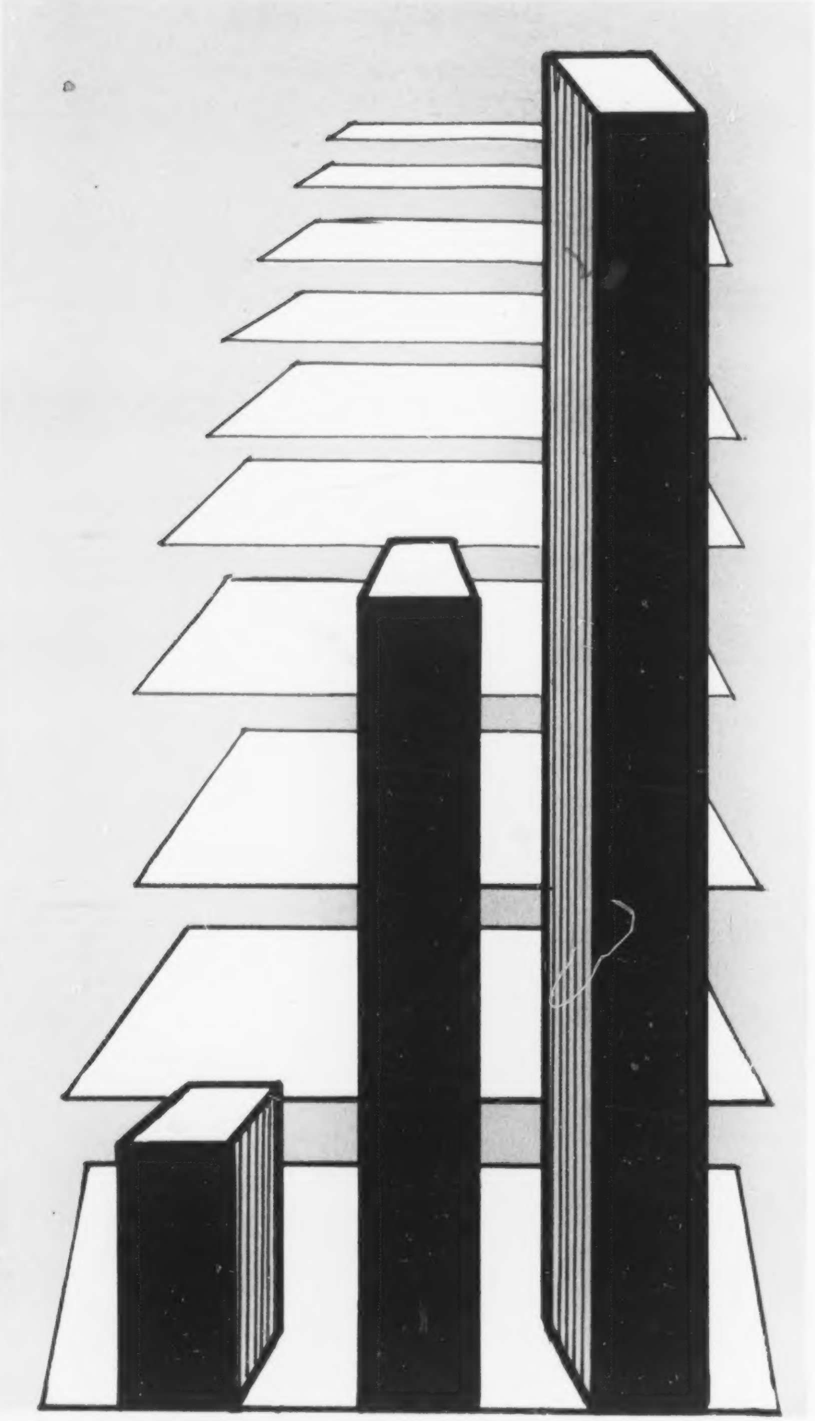
Alx Miller

Alex Miller
Assistant Professor of Management
and Director, MBA Center of Excellence
for New Venture Analysis

Pat Postma

Patricia D. Postma
Associate Director,
MBA Center of Excellence
for New Venture Analysis

NEW VENTURES: A Fresh Emphasis On Entrepreneurial Education



Alex Miller

The critical importance of new ventures in determining the future of our nation's economy and society's well-being is now uniformly accepted by experts in economic development. It is also a generally accepted fact that educational institutions must respond to the growing importance of new ventures. At the 1986 White House Conference on Small Business, increased emphasis on entrepreneurial education ranked number 6 of the 60 policy recommendations set forward. However, within the academic community there is less certainty concerning the proper role of business schools in educating future leaders of new ventures.

The U.T. Program

The MBA Program of the College of Business Administration at The University's Knoxville campus has adopted one of the most aggressive stances of any of the nation's business schools in terms of programs specifically developed for students of new venture management. With funding from the state's Centers of Excellence program, the faculty and administration of the business school have developed an innovative program which focuses on the management of significant, fast-growing new businesses and which stresses a "hands-on" approach to learning. Enrollment in the program is intentionally kept small to allow the faculty to work closely with a group of highly motivated and very bright students on the lectures, case studies, and field projects that form the basis of each of the courses in the New Venture Analysis concentration. Six faculty members team up to lead fewer than 30 students through the three courses which now form the concentration. The diversity of the backgrounds of the faculty is necessary to reflect the range of course topics: marketing, finance, law, management, and strategic planning.

The thrust of the majority of business schools in this country and abroad continues to be toward training students to accept positions in traditional managerial jobs for large corporations. Of the 216 graduate business schools in the U.S., only a few dozen have as much as a single course in entrepreneurship or new venture analysis. And even fewer than a dozen offer a formal series of courses for students interested in this subject. The five-to-one student-to-faculty ratio maintained in the concentration at UTK is unprecedented.

Can Entrepreneurship be Taught?

Clearly, not all aspects of entrepreneurship can be taught. Yet, the key to what business schools can and should do in the new ventures domain is to educate those interested. Educators cannot create entrepreneurs any more than they can produce foolproof, step-by-step-by-step recipes for entrepreneurial success. What they *can* do is provide an understanding of rigorous analytical techniques and an appreciation of the limitations of those techniques. When this understanding is coupled with the proper entrepreneurial and leadership characteristics, the combination can substantially improve the chances for success.

Many of the better known entrepreneurial characteristics are not attributes that can be wholly acquired in the classroom: self-confidence, persistence, high-energy levels, charisma, etc. In this respect, if an MBA program hopes to produce graduates displaying entrepreneurial characteristics, the faculty must be actively involved in recruiting students who have already displayed those characteristics.

At U.T., we have learned that it is often difficult to categorize the aspiring entrepreneur. In our recruiting, we try to identify those that have it and know it, those that think they have it and do not, and those who have it and do not know it. This is a difficult and imprecise process, made even more complex because we are not exactly sure what "it" is. Academic research and personal experiences have convinced the faculty that there is a very broad range of individuals and personalities who can be successful entrepreneurs.

Fortunately, not everything about entrepreneurship is as imprecise and as elusive as the personality of entrepreneurs. In fact, we have found a great many useful things which can readily be taught to aspiring entrepreneurs. Many of today's new ventures are led by a team of specialists who have learned quite a bit about the more technical nature of modern startups. Technical information on the details of leveraged buyouts, private and public placement offerings, options for legal organization, tax laws, and marketing research are all subjects important to venture managers. These are also topics that can be effectively mastered in a fairly traditional classroom setting and are thus ideal topics for entrepreneurial studies in an MBA program such as UTK's.

The Role of the MBA Program

For skills that must be learned rather than taught, an MBA program can be an excellent setting. For instance, by seeing and hearing how others have dealt with issues such as business ethics, strategic planning, leadership, and balancing professional life with private life, students learn new ways of thinking about the role of the venture manager and dealing with the complex problems he faces. In the program at UTK, such learning is facilitated by regularly exposing students to successful entrepreneurs who have dealt with such problems. The MBA experience provides an opportunity for young people to observe first-hand the rich assortment of managerial styles of practicing managers who regularly visit the campus. Recent visitors have included "Buck" Rogers, marketing genius of IBM, Ted Turner, telecommunications maverick, and T. Boone Pickens, oil magnate and champion of stockholder rights. Students in

The Quarterly Report

One way to insure that course material is relevant to the needs of the business world is to keep faculty members in constant contact with practicing managers.

To keep the faculty members in the New Venture Analysis concentration current, the MBA Center for New Venture Analysis has established the Quarterly Report, a group of chief executive officers of entrepreneurial firms who meet quarterly in a session open only to members and invited faculty. The CEOs come to discuss current business problems, faculty members attend not as experts, but to learn more about the issues of entrepreneurship and new venture analysis.

Member CEOs range in experience from those who have taken companies public to those who have just begun the venture creation process. The group consists of fewer than two dozen members.

A typical half-day agenda is devoted to discussions on the most pressing issues for a few Quarterly Report members, but meetings occasionally include visits and presentations from outside experts as well. The Center handles the administrative details of managing the meeting in return for giving its faculty the opportunity to learn from these discussions.

This is an innovative, concentrated effort by the University and cooperating business leaders to help each other and at the same time improve the education of tomorrow's leaders.

Assessing the potential demand for new products requires judgement based in part on personal experience and in part on "hunch." It is an art as much as a science. But the entrepreneur must make it as exact as possible.

the New Venture Analysis concentration are also exposed to numerous case studies designed to teach material that is difficult to teach in the traditional lecture format. Field projects are another important means of learning as contrasted with teaching.

The Innovation-Entrepreneurship Connection

Much of the field work and classroom discussion in the New Venture Analysis concentration centers around special problems of so-called high tech businesses. Occasionally the question arises: "Is entrepreneurship limited to high tech firms?" The obvious answer is "no". However, the center has consciously limited its efforts to the study of business ventures that do involve significant innovations of one kind or another.

These may, in fact, be technical innovations in the product which is the basis of the company. In other words, the company may be high-tech, but the innovation could just as well involve low-tech products being financed, produced, or marketed in new ways.

For example, numerous companies have started in the past several years which supply cost-saving production equipment to industries producing high-tech products. Many of these companies' cost-saving equipment represents old technology being put to a new use. The New Venture Analysis faculty have defined both the company supplying the old technology to the new market, and the high tech companies constituting the new market as entrepreneurial ventures worthy of study and classroom discussion.

However, we do not devote effort to the study of all small businesses. Franchised restaurants, laundry services, bakeries, machine shops, etc. are just a few of the almost limitless examples of small businesses which form an absolutely vital component of our economy. However, many of these businesses involve relatively limited levels of innovation. The management of such firms is the domain of the Small Business Administration and the national network of chambers of commerce.

In order for us to avoid duplicating the types of services provided by these organizations, it is desirable to marshal the University's considerable resources toward the special problems arising in new ventures which involve some aspect of the multi-faceted process of innovation. That is where we can be of the greatest service, and it is where our graduates can have the greatest impact.

The New Venture Analysis Concentration

The MBA program at UTK consists of two years of coursework aimed at developing both the breadth and depth of knowledge necessary for our graduates to pursue significant managerial roles in tomorrow's economy. A year of required core courses lays the foundation for a well-rounded business education by covering all the fundamentals. Following that, all students are required to work in a summer internship program aimed at providing the "hands-on" experience for which there is no substitute. When students return to campus for their second year, they are largely free to choose from a wide selection of second-year course electives, but they must choose at least one area of concentration.

The New Venture Analysis concentration currently consists of three courses: Marketing Opportunity Analysis For New Ventures, Financial and Legal Aspects of New Ventures, and Strategic Planning in New Ventures. (A fourth course specifically on the management of innovation and its role in new ventures is presently under consideration.) The faculty responsible for these courses coordinate their classes so that the three form an integrated stream of learning for the students.

Marketing Opportunity Analysis for New Ventures is a course devoted to assessing the potential demand for new products. Such analysis is difficult enough when one is dealing with well-established, mature products. But in this course, the students and faculty consider early stage products and technologies for which market data or managerial experience might not be readily available. The situation can be likened to the difference between predicting the demand for a more efficient automobile and assessing the demand for an entirely new mode of travel. Research on the latter is a sort of investigative reporting which consists of piecing together data from experts in the field, potential customers, potential competitors, and whatever secondary data sources might exist. This kind of analysis requires judgement based in part on personal experience and in part on "hunch." It is an art as much as a science. But, the entrepreneur must struggle to make it as exact as possible, since the demand for his product is the basis for virtually all decisions to follow.

UTK has one of the strongest faculties in this area of any school in the country. Dr. Robert B. Woodruff, creator of the original MOA course in the College of Business Administration, is widely known for his pioneering work in developing for managers and market researchers a rigorous framework to follow in analyzing market demand. Dr. Ernest R. Cadotte, who holds patents for his developments in the collection of market research data, combines his formal academic training in market analysis with a wealth of personal experience in commercializing innovations.

UTK's expertise in MOA is also strengthened greatly by the University's close ties with the Oak Ridge National Laboratory. The nation's laboratories represent a tremendous investment, and one of the most important methods we have for recouping this investment is the commercialization of technology which can be of public benefit. Only in the last five years, however, has the nation adopted a policy of spinning off technologies developed in our national labs. Of the 16 national labs, Oak Ridge has been perhaps the single most successful in managing this process of technology transfer. With an army of research Ph.D.s 1,500 strong, Oak Ridge has a tremendous diversity of technologies. To help manage the diverse technology transfer in this process, the laboratory's staff of experts retain the services of a sizeable force of MBA students and faculty members who perform a steady stream of marketing studies for some of the most exciting technological advances in the world. The relationship between the National Laboratory and the College of Business Administration is a tremendous advantage for UTK's MBA students interested in managing technology-based new ventures.

The course entitled *Financial and Legal Aspects of New Ventures* guides the student through an in-depth analysis of the latest techniques in making significant business deals. This is an area of entrepreneurship that is growing more complicated as securities and tax laws experience constant changes and new methods of raising capital are regularly being introduced. In the more significant new businesses, these areas are clearly not to be left to amateurs. Professionals with careers devoted to staying abreast of the latest developments are needed to make sure the new venture takes full advantage of modern financing techniques while simultaneously avoiding anything illegal or unethical.

To address these difficulties, the U.T. New Venture Analysis program has assembled a team of experts covering a wide range of financial and legal areas. Patricia D. Postma, Ph.D. in economics, works regularly with startups to plan and manage financial matters. Dr. Postma has experience in financial matters which range from setting up in-house financial control systems to arranging initial placement offers. James Gardner, a lawyer with the firm of Hunton and Williams, has a J.D. in securities law from Yale, a divinity degree from Harvard, and is a practicing lay minister. His background gives him a unique perspective on a financial securities industry recently rocked by a series of scandals. This year Ronnie Clayton, Assistant Professor in the Finance Department, also joined the team for this course. Dr. Clayton's background includes a Ph.D. in financial management and extensive additional training and experience in banking. Thus, he combines an appreciation of the needs and problems of financial managers with an understanding of the perspective of the financier.

Strategic Planning in New Ventures is a course devoted to helping students learn how to integrate information from various functional areas (such as marketing and finance) to produce a viable business plan. The business plan is considered the backbone of many new ventures, but it must be flexible, since the future of new ventures is always unpredictable. Thus, students must consider the art of managing change and developing contingency plans to cope with it. Roger Hudson, Assistant Professor of Management, did his graduate work at the University of Minnesota, where he was key member of a research team doing a major study on the differences and similarities of independent start-ups and internal corporate ventures in the computer software industry. This background makes him ideally suited for this course, which looks at developing and managing the strategic plans for both corporate and independent ventures.

A Different Learning Process

There are several reasons why successful courses in venture management must have a different pedagogical nature than most typical business school courses. In general, these differences make the venture management concentration more applied, more pragmatic, and more of a "hands-on" experience than other areas of study.

The managerial methods of developing new businesses have recently undergone a rapid series of fundamental changes that are not yet fully understood. Yet, more changes are constantly occurring. If instructors are to give their students the very latest information, they must have an ongoing relationship involving them in the day-to-day problems challenging practicing venture managers; they should also have a chance to apply it in a real business situation.

As a result, each of the courses in the New Venture Analysis concentration involve the students, working in teams, on a problem faced by people with real dollars at stake. In some cases this means that students report to the top managers of new ventures, and in other cases they work on projects they intend to pursue on their own after graduating.

Recently, these projects have included such diverse and demanding assignments as estimating the market demand for high-tech reinforcing fibers designed to be added to newly created polymers and ceramics; determining the proper valuation of a medical-imaging company interested in going public; and developing a business plan for a centralized, just-in-time inventory service.

An Unparalleled Emphasis on Entrepreneurship Education

There is much to be done by academic institutions in responding to the needs for the increasingly important new ventures sector of our economy. Engineering schools need to educate their students on the importance of not only designing superior products, but also to respond to the needs of the marketplace. (To date, this response has been fairly strong: U.S. colleges of engineering now teach more than 50 entrepreneurship courses – second only to the number now found in the nation's business schools.) Students in colleges of arts and sciences need to be informed that many of the results of their labor and insights will have an impact only to the extent to which they are able to integrate those achievements into an economically viable business venture. Schools of medicine must adjust their thinking to reflect recent moves away from government-subsidized medicine to a system of health care dependent in large part on private enterprise and entrepreneurship to develop and deliver the latest medical breakthroughs. And law schools must change their curricula to reflect changes in the tangle of laws governing management and new venture creation as well as to adjust the practice of law to the tremendous increase in the sheer volume of business ventures now being created and reorganized.

But nowhere is the need for adjustment in our educational process greater than in the nation's business schools. Since their inception, business schools around the world have seen their mission as training young people for entry-level positions with large corporations. It is now clear that the future well-being of our economic system appears to depend heavily on its ability to birth healthy new businesses and to successfully nurse them through the first years. Business schools must undergo some radical changes if they are to play an important role in this development.

Such changes will require a cooperative effort, with different schools playing different roles. Some schools will support academic research directed at better understanding the new venture analysis process. Others will serve as administrative arms of the Small Business Administration in one of their many Small Business Development Centers. Some will emphasize retraining professional managers now in the overstaffed ranks of corporate America, to create a supply of experienced managers needed by the tremendous increase in new business formations in this country. Still other schools, such as The University of Tennessee, Knoxville, have adjusted their programs to suit the needs of the ever-increasing number of students who have decided their best contribution can be made outside the traditional MBA position in large, established corporations.

Of those schools falling into the last category, none has made a stronger commitment to establishing excellent educational programs than the College of Business Administration at The University of Tennessee, Knoxville. Warren Neel, Dean of the College, and Roger Jenkins, Associate Dean of Graduate Programs, have perceived the changes in the needs of the business community and committed the College to achieving a position in the vanguard of this change. Their commitment has been supported and matched by the Tennessee Higher Education Commission which, in 1985, approved increased state funding in these academic programs as part of their Centers of Excellence Program. As a Center of Excellence, the MBA program has accepted responsibility for creating and maintaining one of the premiere entrepreneurship educational programs in the country. Mastering this complex assignment and maintaining topnotch quality will be a difficult task. But with state government, University administration, CBA faculty, the student body, and the business community all working together, prospects for success are bright. ☐

From Physics to Business

New technology allows workers to take materials in any form – solid, liquid or gas – and analyze them for ultratrace amounts of every element in the periodic table except helium and neon. For example, prototypes have been able to ascertain the presence of as few as five atoms of kryptonite in a litre of groundwater. Hal Schmitt's work in this field has led twice to his inclusion by the Industrial Research Institute in their annual listings of the top 100 U.S. innovations.

Dr. Schmitt represented the Tennessee MBA program at the last annual Price-Babson conference on educating entrepreneurs. At this unique conference, successful entrepreneurs and educators met for three days to talk about how to best meet their mutual needs.

Dr. Schmitt found the differences among the pedagogical methods of physics, his own discipline, and business to be quite interesting. "In physics, we don't use the case method, we have lab sessions instead. I think that business schools which rely exclusively on the case method are like physics departments which expect students to do lab work without first having calculus lectures. On the other hand, for business schools to exclude all case analysis would be the equivalent of physics majors studying theory without the essential lab work."

Dr. Schmitt's influence has led partially to the New Venture Analysis concentration becoming a combination of lectures on theory, case discussions, and field problems.

Alex Miller, (l) Director of the MBA Center of Excellence for New Venture Analysis, questions Hal Schmitt on the business applications of Resonance Ionization Spectroscopy.

During its 11-year history of participating in MBA competitions, UT's MBA program has developed a reputation for excellence. This year's MBA Team reinforced this reputation by winning top honors at the 1987 Southeastern MBA Competition, placing first in Case Competition and second in Business Simulation. Pictured from left to right are Lillian Mason, Glen Prosser, Lisa Crabtree, Art Hall, and Cathy Young. (Robin Hood Photo).

The MBA "Red Carpet" Treatment

Every year the strongest candidates for the MBA program from all over the U.S. are brought to UTK for an all-expense-paid two-day visit.

The candidates have varying educational backgrounds and amounts of work experience, reflective of the MBA program's attempt to diversify its student population. Those invited are selected on the basis of their GMAT scores and GPAs.

During their visit, the group attends MBA classes and meets with faculty members, current MBA students, alumni and community business leaders from a variety of fields. The visits are designed to encompass a broad range of activities providing a variety of opportunities to interact with a diverse group of people, all important to a successful MBA experience.

Profile of the 1987 MBA

A recent poll of the MBA class of '87 featured in the June issue of **Inc.** magazine shows that MBAs are more eager than ever to pursue careers with entrepreneurial firms. Though certainly not all MBAs wish to work with new ventures, **Inc.** found a significant portion having a pronounced entrepreneurial bent.

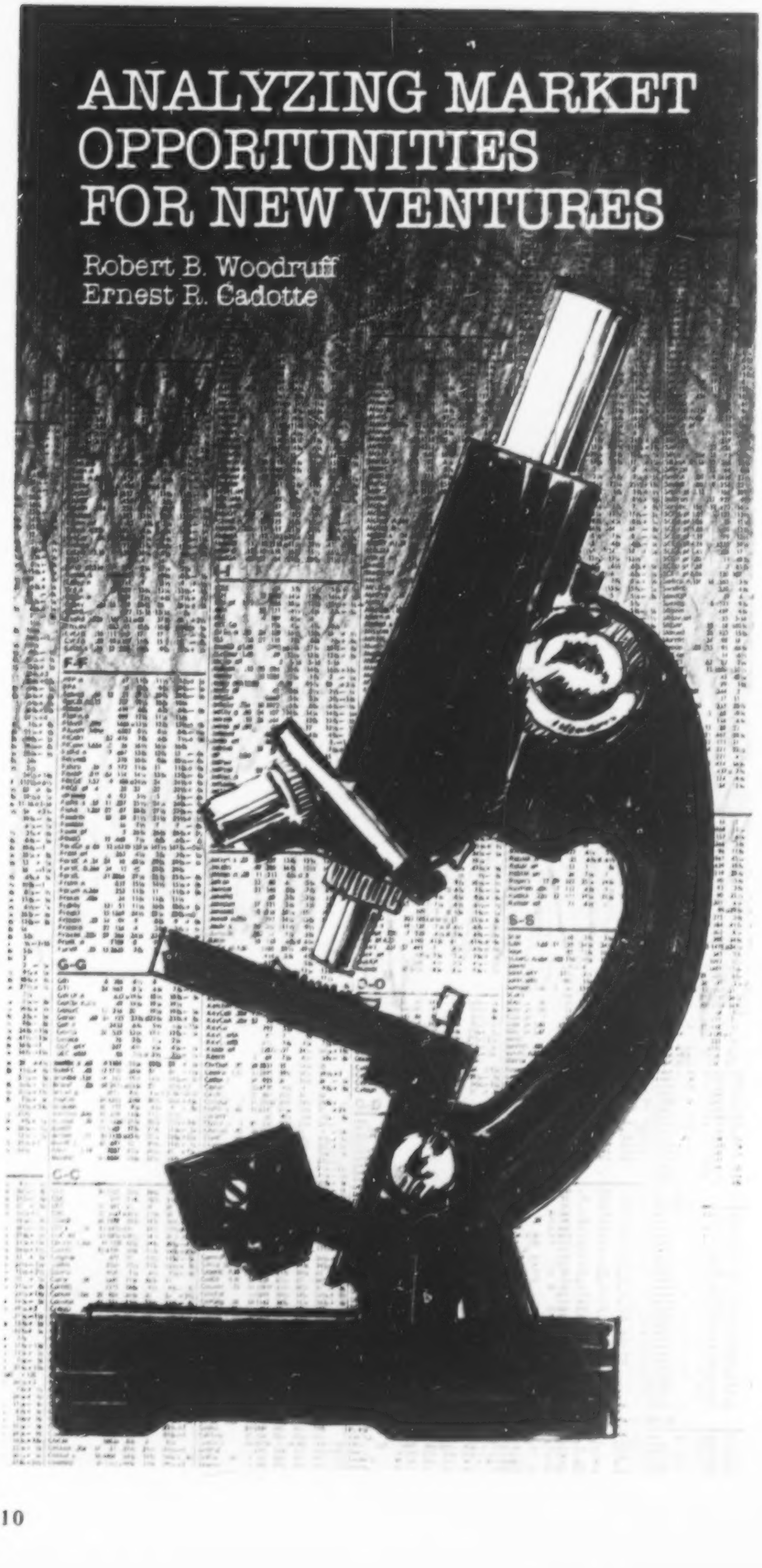
MBAs, says **Inc.**, are not the smug, pin-striped, fast-track go-getters who have been blamed for everything from the fatal myopia of large corporations to the rampant corruption on Wall Street. They do not think that two years in a classroom has taught them all they need to know about running a company. Nor do they expect to conquer the world at any point in the near future while being paid a six-figure starting salary for doing it. Rather, they are the type of bright, resourceful, roll-up-your-sleeves young people that most growing companies would be happy to have as employees, customers, or suppliers.

Of students polled, 65 percent said entrepreneurial companies offered the best chance for advancement. More than 75 percent said such companies provided more challenging work and 84 percent said these companies were more receptive to new ideas. Finally, 62 percent said that entrepreneurial firms provide greater opportunity for building personal wealth.

Even in the face of such expectations, only about 5 percent of the respondents expected to begin working with entrepreneurial firms immediately upon graduation. The majority of those aspiring to venture management planned first to gain experience in more traditional management positions.

ANALYZING MARKET OPPORTUNITIES FOR NEW VENTURES

Robert B. Woodruff
Ernest R. Cadotte



Each new business venture faces an environment which is partly friendly and partly hostile, partly known and partly unknown. While a great idea, adequate financing, and sound management are obviously important in beginning a new venture, the external environment will also be a crucial factor in the success or failure of the undertaking. The implication is clear: new venture decisions should be based on a careful analysis of this external environment, and this can be accomplished by conducting a market opportunity analysis (MOA).

The major elements of a market opportunity analysis are shown in Figure 1. With an analysis of the relevant macroenvironment, major forces (economic, social, technological, legal, and natural) are uncovered which might affect market opportunity. Secondly, major markets in which the product might compete are identified and segmented. Next, a wealth of information is gathered to learn about specific customers in markets, the competition, and appropriate channels of distribution. This information, in turn, both provides important guides for developing a strategy to take advantage of market opportunity and lays the foundation for forecasts of the new venture's sales. The final step in the process is an evaluation of the attractiveness of the entire market opportunity in terms of financial return, consistency with organizational objectives, and other criteria.

Macroenvironment

Every new venture seeks market opportunity in the context of a larger macroenvironment. Forces arising from this part of the external environment may affect the venture's organizational capabilities, customers, competitors, and channels of distribution. For instance, government spending priorities regarding the proposed space plane could greatly affect American Matrix Corporation's ability to sell advanced structural ceramics. Similarly, the outcome of technological advances by the Oak Ridge National Lab regarding artificial intelligence, computer imaging and manipulator arms could determine the next generation of factory robots. Or, an economic downturn could reduce consumer spending for nonessential goods and undermine the sale of Phyton Technologies, Inc. (Oak Ridge) horticultural plants, which they produce by cloning desirable characteristics.

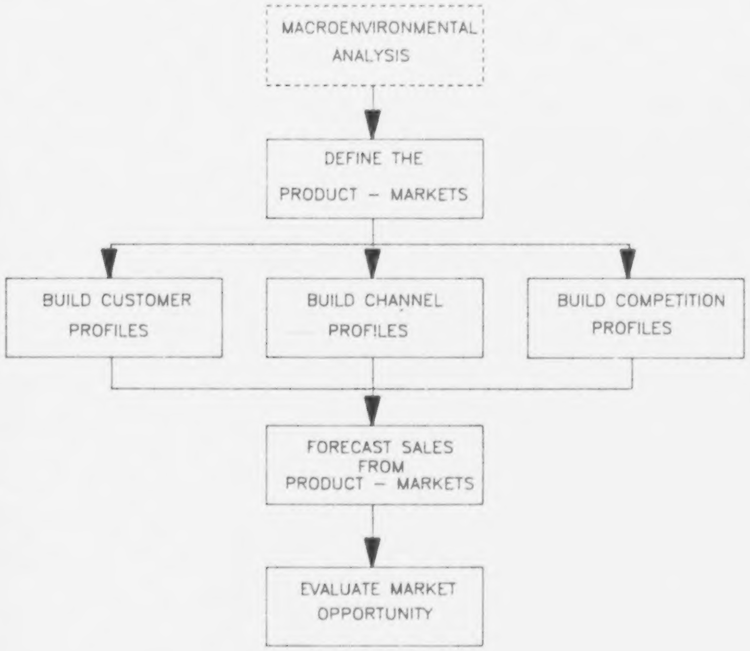
A macroenvironmental analysis identifies important trends with regard to these forces which will affect the potential sales for the new venture. Importantly, not all aspects of the macroenvironment will be relevant for the MOA. The analyst's challenge is to selectively examine those forces operating on the determinants of market opportunity.

Product Markets

Markets for a new venture's product are typically not homogeneous. The idea of a *market structure* pinpoints this fact. Market structure is the arrangement of groups or segments of buyers comprising a total market. Notably, each segment differs from the others in the way its buyers will respond to a marketing strategy. In fact, this structure exists, for the most part, because customers in different groups have at least somewhat different *market requirements*. Market requirements are the benefits that buyers expect from sellers as a condition of buying. Probably the most important and difficult challenge for an MOA is to find out what the market structure is and what its customers' market requirements are.

A good starting point for describing market structure is to search for markets for competing, but existing products. Rarely does a new venture have an entire market to itself, regardless of the innovative quality of its product. Customer needs are seldom created by new products. Rather, new products provide new ways of meeting existing needs. For example, when Sony brought out the VCR, a very innovative consumer product, it was meeting the needs of customers who wished to watch programming at their convenience.

FIGURE 1: THE MOA APPROACH


MACROENVIRONMENTAL ANALYSIS
DEFINE THE PRODUCT – MARKETS
BUILD CUSTOMER PROFILES
BUILD CHANNEL PROFILES
BUILD COMPETITION PROFILES
FORECAST SALES FROM PRODUCT – MARKETS
EVALUATE MARKET OPPORTUNITY

This relationship between market needs and products is the basis for the concept of *product-markets structure*. Markets are created by needs, buying power, and products to satisfy needs. If a need is present, the overwhelming odds are that there are already some products around to satisfy that need. Thus, such products become a source of competition. For each customer need, there are typically several products available to satisfy that need. A *generic class* groups all these products into one category, and each product in the generic class provides an alternative way of satisfying the need. These products are the different *product types* or forms. Finally, each product type has one or more similar brands (i.e., different company offerings) competing with each other. See Figure 2.

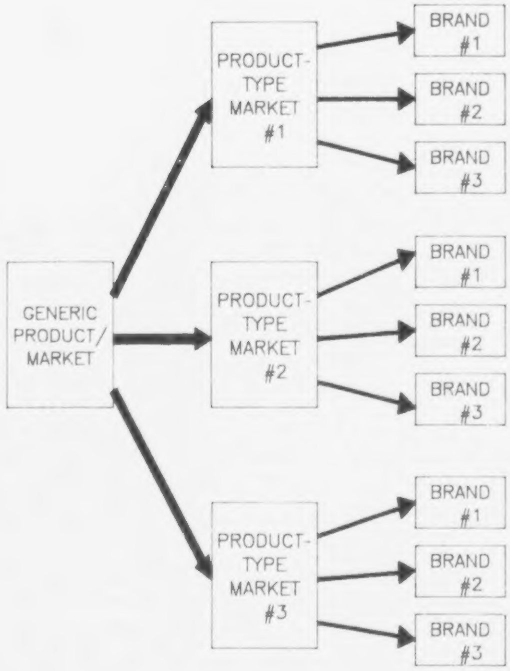
The restaurant business provides a familiar illustration of product-market structure. The need, or interest, is eating out, where various aspects of the meal are provided for the customer, including menu selection, food preparation, and cleanup. The generic class of products available to satisfy this need is restaurants (see Figure 3). In turn, the restaurant class is comprised of different subclasses of restaurants such as fast food, family and atmosphere restaurants. Each restaurant subclass may, in turn, be further broken down into specific types of restaurants such as fast food hamburger, pizza, and chicken restaurants. Notice that each restaurant type is, in reality, a rather unique way to meet the underlying consumer need. That is, each restaurant type provides a unique and different combination of benefits and costs. Thus, customers must choose which benefit/cost combination is best for them.

Each restaurant product-type may be further broken down into competing brands. To build an edge over competitors, each company offers a somewhat unique *brand*. Of course, a brand has the characteristics of one of the product types in the generic class. McDonalds, Burger King and Wendys represent similar brands that compete in the hamburger fast food restaurant product type.

Generic classes, product types, and brands comprise a market arena. Each company and its brand is competing for business in this arena, taking on both similar and dissimilar brands of other product types when competing for a share of sales. McDonalds is really competing with other fast food hamburger restaurants, other fast food restaurants (e.g., chicken and pizza), as well as all other types of restaurants (e.g., family-style table service, family style self-service, ethnic atmosphere, etc.). An MOA must develop a picture of what this larger arena is like.

The task of defining product markets is challenging, since more than one generic class and product type classification is possible. In fact, even different companies selling in the same general arena may see the product-market structure differently. Ultimately, management must decide what structure makes the most strategic sense for the company. For example, American Matrix Corporation initially positioned its ceramic reinforcing materials within the advanced structural ceramics market, but further analysis revealed that high performance ceramics also competed with reinforced polymers and metal matrix composites in the aerospace, automobile, and sporting equipment industries. By expanding their definition of product-market structure, management was able to identify new market opportunities (substituting ceramics for plastics and metal in planes, cars and sporting equipment). It also helped to identify entrenched competitors who would not easily yield their positions in these markets.

FIGURE 2: PRODUCT - MARKET STRUCTURE



Building Customer Profiles

With product-market defined, the MOA can concentrate on describing the customers that comprise these markets. Figure 4 provides a listing of the kinds of information needed. Essentially, management will want to know (1) what customers are like as real people; (2) how they go about deciding what to buy to satisfy the need/want; and (3) what outside, uncontrollable (by the company) influences are affecting buying decisions. Together, the information gathered forms a profile of the customers in product-markets.

Building useful customers profiles usually involves putting together a large body of information. Information about customers that may be important in planning marketing strategy can come from several sources, including suppliers and channel members, marketing research, and company personnel with market connections (e.g., salespersons). Further, building customer profiles can be complicated by the fact that separate profiles may be necessary for each market segment in the product-market structure. Therefore, it is essential to systematically gather and record information that will be integrated into the customer profile. Expert assistance may also be needed to plan marketing research if that source is to be used effectively.

Building Channel Profiles

More often than not, cooperative channel partners are a key to success of a marketing strategy, particularly for a new venture. Recently, Computer Technology and Imaging (CTI) substantially expanded its prospects for PET scanners by signing an exclusive distribution contract with Siemens, Inc., CTI had previously developed the capability to produce a high-performance ECAT brain scanner at a comparatively low price. Their price advantage made it possible for many regional medical centers to purchase scanners, whereas previously only research hospitals could afford to buy them. One of their major obstacles was the channel: no one knew who CTI was. CTI also encountered a very long selling cycle because ECAT scanners represented a major capital expenditure. Their salespeople were spending all their time flying around the country in order to make countless presentations to various hospital committees. CTI's distribution agreement with Siemens turned these problems around. It gave the customers a name they could trust and CTI a worldwide sales force. CTI is now free to focus on improving their production facilities and developing new products while Siemens focuses on creating sales.

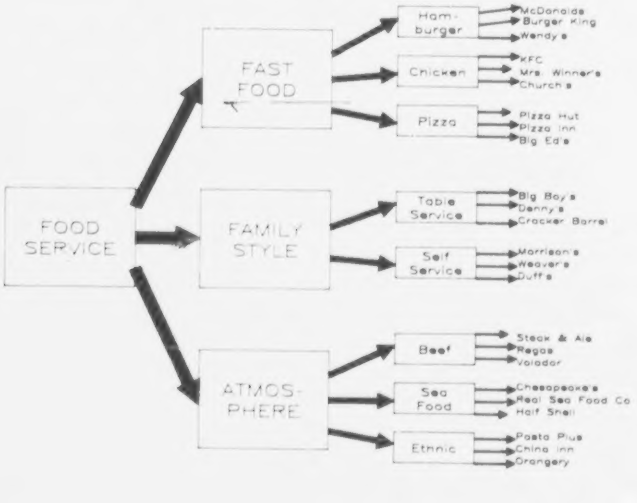
In contrast to CTI, Phyton Technologies found it necessary to distribute a high-tech product (cloned horticultural plants) through low-tech channels. Its cloned Boston ferns and rhodendrons could literally end up in the garden shop of K-Mart, in the local nursery, or in the florist down the street. After developing the cloning technology, Phyton's next task was to find out how shrubs and household plants are sold throughout the country. What trade shows should they attend? Who are the distributors? How far in advance could they book their orders? When do nurserymen pay their bills? These and many other questions had to be answered before the business could become viable.

In the more innovative ventures, the company may have little experience with channels for the product. However, a logical starting point is to examine the existing channels used by competing companies with products in the generic class. Special attention should be given to identifying which types of firms compose the channel (e.g., brokers, drop shippers, wholesalers, rack jobbers, etc.) and what their normal functions are. It is also important to know the protocol for conducting business within the relevant channels, including the normal terms of trade, special discounts and fees, minimum order quantities, lead time requirements, seasonal purchase patterns, promotional support requirements, etc. Figure 5 illustrates the kinds of information needed to develop a channel profile. This type of information can help management decide whether existing channels can be entered, whether they can and will provide the cooperation required, and whether other channel options are available. Further, the information should provide leads and contacts with specific channel firms for later use in negotiating a working arrangement for handling the product.

Building Competition Profiles

Competition is comprised of all sellers who are appealing to the same product-markets. The essence of competition is vying for sales by employing marketing strategies. An MOA tries to uncover these competitive strategies and identify their strengths and weaknesses.

FIGURE 3: EXAMPLE OF MARKET STRUCTURE FOR RESTAURANT INDUSTRY



The product-market arena in which a brand competes includes different forms of competition – competition from alternative product types (e.g., family self-service restaurants vs. family table service restaurants) and from similar brands of the same product type (Big Boy's vs. Dennys). The **MOA** must alert management to the nature of both of these kinds of competition. Thus, it is essential to start with a broad look at competition within a generic class of products. Then the process can be narrowed down to competition between product types and finally to similar brands of a product type.

When looking at competition broadly, a company can gather information on each and every firm with product offerings in an entire generic class. Thus, the starting point is to analyze whole industries. This can be done with an *industry analysis*. The purpose is to form a picture of the competitive practices typical of the entire industry and to uncover difference in the strategies typical of different product types. For instance, an **MOA** for a robotic manipulator arm might examine the robotics industry, comprised of all firms that offer industrial robots. The task would be to gather the kinds of information shown in Figure 6.

The next step would be to do additional industry analyses, but now by narrowing the selections to just those firms handling one (or more) selected product types. Following the manipulator arm analysis, the **MOA** would assess major product types for the industrial robot industry. These product types are broken out by the major applications of industrial robots and include process operations (e.g., machining, painting, welding, etc.), assembly operations, materials handling, and testing and inspection. The market analyst would try to understand what makes each group of firms unique as opposed to the rest of the robotics industry. Again, the focus is on what commonly happens in the entire robotics industry as it taps market opportunity. Figure 6 suggests that the product type industry analysis should parallel the generic class industry analysis so that comparisons can be made.

The last step in the competition analysis is to assess *key* competitors. These are the specific competitor companies that are going to have the greatest impact on the new venture's ability to achieve objectives in markets. By conducting the overall industry analysis first, the analyst will have a sound perspective, by this time, to identify these key competitors. For manipulator arms, the key competitors for assembly manipulator arms are General Motors Fanuc (GMF), Asea, Unimatton, and probably a relatively few other companies. So that comparisons can be made to see how the key competitors are positioned in their industry, the information on each key competitor should cover the items shown in Figure 7.

Forecasting Sales

As Figure 1 illustrated, forecasting sales is the last step in the MOA prior to conducting a comprehensive evaluation of market opportunity. Although it is beyond the scope of this article to review the many different techniques for forecasting, the nature of the task can be briefly examined. Essentially, forecasting involves anticipating how much buyers in product-markets will purchase in the future. For instance, IBM's forecasting for its PC new venture looked ahead more than a decade. Forecasting must rely on information that estimates important determinants of market opportunity. For this reason, forecasting should be attempted only after the other components of the MOA have been completed.

Generally, several kinds of forecasts are important. First, forecasts of sales for an entire generic class can be made. Forecasts of horticultural plants, industrial robots, or reinforcing materials fit into this category. Second, forecasts of particular product types in the class – house plants, assembly robots, or reinforced polymers – are also useful. Note that forecasts for a product type may be compared to those for the generic class to see the anticipated relative popularity of that product type against its competitors in the class. Third, sales of the company's brand are essential to the evaluation of market opportunity. Further, brand sales can be compared to product type sales (this is one way to measure predicted market share) to see how effective a company's brand strategy is expected to be.

Evaluating Market Opportunity

At this point in the MOA process, all the ingredients for an evaluation of market opportunity are available. The challenge is to put them all together into an overall picture of market opportunity. There are two different aspects to the evaluation. One is the very qualitative description of the market arena in which a brand will compete for business. This description includes five major components: (1) the structure of the market, (2) the market requirements of customers, (3) the capabilities and requirements of distributors, (4) the strengths and weaknesses of competition, and (5) the important environ-

FIGURE 4

COMPONENTS OF A CUSTOMER PROFILE

What are customers like as people?

- Needs and wants
- Important use situations
- Activities and interests
- Opinions and attitudes
- Demographic characteristics
- Values

How do people decide to buy?

- Problem recognition
- Search for and use of product information
- Evaluation of alternatives
- Purchase procedures
- Satisfaction with past purchases

What outside influences are affecting buying?

- Population and social forces
- Legal forces
- Technological forces
- Economic forces
- Natural forces

FIGURE 5

COMPONENTS OF CHANNEL PROFILES

What is the needed channel arrangement?

- Number of levels in channel
- Types and number of firms at each level
- Geographic coverage

What cooperation is needed from the channels?

- Advertising assistance
- Market coverage
- Pricing assistance
- Displays of product
- Personal selling presentations
- Inventory maintenance
- Product servicing

What incentives are required by channel?

- Price discounts
- Advertising allowances
- Ordering assistance
- Sales promotion allowances
- Delivery terms

What are the normal operating procedures of the channel?

- Terms of trade
- Functions performed at each level
- Typical order cycle and quantities
- Standard discounts

FIGURE 6

COMPONENTS OF AN INDUSTRY PROFILE

What industry is to be described?

- Name
- Geographic coverage

What is the industry's size, growth, structure?

- Number of firms
- Sales
- Market shares
- Industry structure
- Life cycle stage

What are the industry's marketing strategy and tactics?

- Market targets
- Marketing objectives
- Marketing mix

What changes in the industry's size and marketing strategy/tactics are anticipated?

- Size and strength
- Market targets
- Marketing objectives
- Marketing mix

FIGURE 7

COMPONENTS OF A KEY COMPETITOR PROFILE

Who are the key competitors?

- Companies serving the same markets
- Companies successful in meeting demand

What is the key competitor's financial size and strength?

- Sales
- Profit margins
- Total assets
- Debt
- Equity
- Various financial ratios

What are the key competitor's technical, marketing, and management capabilities?

- Mission and business objectives
- Market share position and trends
- Management capabilities and limitations
- Technical and operating capabilities
- Target market strategies
- Access to key resources

What changes are anticipated?

- Size and strength
- Market targets
- Marketing objectives
- Marketing mix

mental trends expected to cause change in market opportunity. Each of these factors plays an important role in planning marketing strategy for the new venture.

Market structure provides a picture of the market groups or segments that are potential target markets for the company. An entrepreneur needs this input in order to select a targeting strategy. Market requirements must be met by the company's marketing mix (product, price, promotion, distribution, and services). Management must assess the capability of the company to successfully meet the requirements of each candidate segment. This assessment is an important factor in selecting which segments eventually become targets. Further, the requirements provide important guides as to what to build into each component of the marketing mix.

Channel capabilities and requirements determine how much work the entrepreneur must do in selling to the endorser versus how much can be farmed out to distribution specialists. This is especially important if the new venture does not have the resources to directly contact the final customer. In addition, existing channels may be able to readily accommodate the new product with very little increase in selling effort. The entrepreneur must know the distribution options and be able to identify the factors necessary to attract key distributors.

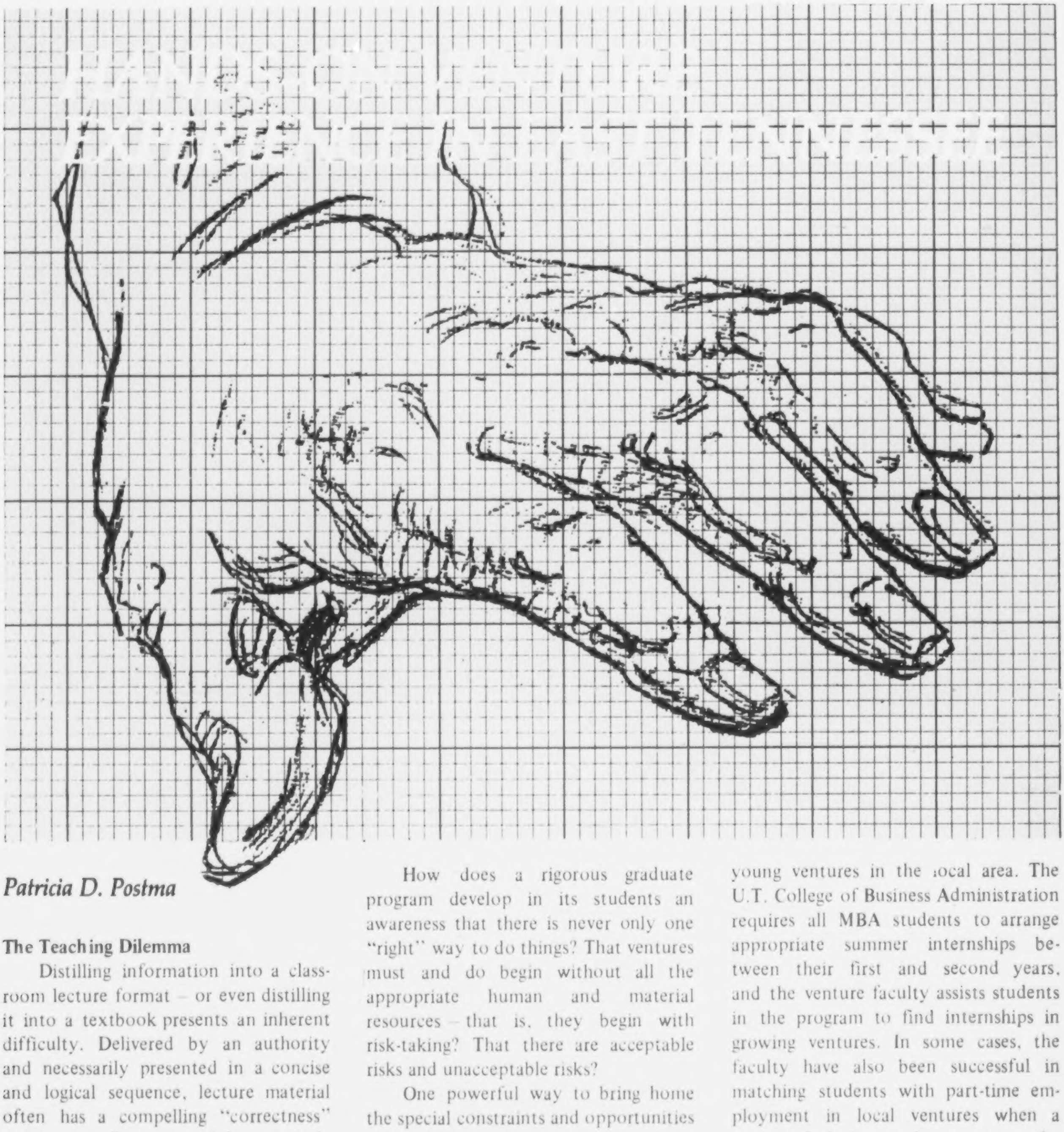
Competitive strengths and weakness must also be considered when selecting market targets. No company wants to enter market segments that are saturated with competitors. More often than not, the success of a new venture depends on finding market segments where the company can develop a competitive edge. Further, management will need guidelines on how to compete with key competitors in each target segment. The strengths of competitors must be matched or avoided, and the weakness must be scrutinized for possible ways to create differential advantages. Finally, environmental trends are important for determining how stable or long-lasting the opportunity in market segments will be.

The other aspect of the evaluation of market opportunity is quantitative in nature. The forecasts of sales provide estimates of the magnitude of market opportunity. These estimates, in turn, are crucial for determining financial performance of a new venture. Analyses of profits, return on investment, payback periods, cash flow, and other such performance measures all depend on having accurate estimates of sales.

Ultimately, many different factors are likely to be considered in making the go or no-go decision on a new venture. No doubt, particularly the entrepreneurial kind of manager will always rely on subjective judgment or "feel" in making the final decision. In fact, an MOA is not intended to be a substitute for judgment. An MOA simply cannot eliminate all the risks and uncertainties that accompany new venture decisions. However, an MOA can help the entrepreneur clarify and better understand the dimensions of the risk and uncertainty. That is an MOA's real contribution – to help entrepreneurs see all facets of the opportunity as well as to understand the possible threats. In this way the MOA ensures that the judgment of an entrepreneur is an informed one. ☐

Drs. Robert Woodruff (left) and Ernie Cadotte discuss a conceptual framework for analyzing market opportunities.

HANDS-ON VENTURE EXPERIENCE IN EAST TENNESSEE



Patricia D. Postma

The Teaching Dilemma

Distilling information into a classroom lecture format – or even distilling it into a textbook presents an inherent difficulty. Delivered by an authority and necessarily presented in a concise and logical sequence, lecture material often has a compelling "correctness" and is generally presented from a single approach.

Thus, students tend to regard the paths of logic as leading to the "right" answer, the "correct" way. They also tend to assume that these particular methods are universally accepted and they may not suspect that the resources required to apply the theories are not universally available.

How does a rigorous graduate program develop in its students an awareness that there is never only one "right" way to do things? That ventures must and do begin without all the appropriate human and material resources – that is, they begin with risk-taking? That there are acceptable risks and unacceptable risks?

One powerful way to bring home the special constraints and opportunities of ventures is to involve students directly with growth-oriented new ventures in their early stages of development. The UT MBA program for New Venture Analysis provides this involvement in several different ways.

Both the course in Venture Finance and the course in Market Opportunity Analysis require students to work in teams on course-related projects with young ventures in the local area. The U.T. College of Business Administration requires all MBA students to arrange appropriate summer internships between their first and second years, and the venture faculty assists students in the program to find internships in growing ventures. In some cases, the faculty have also been successful in matching students with part-time employment in local ventures when a student feels he or she can carry the additional work load.

The Venture Environment in East Tennessee

Finding the kind of growth-oriented new ventures to work with would not be an easy task in many places, but East Tennessee is an ideal location for a venture program that wants to provide hands-on experience for its students. A number of powerful influences have converged to stimulate the emergence of new venture activity around The University of Tennessee in Knoxville.

The University itself has generated startups from its engineering, business and science faculties. In fact, the University of Tennessee Research Corporation (UTRC), established to assist the commercialization of products derived from university research, is the oldest organization of its kind in the country. A second extraordinary stimulus is the nearby Oak Ridge National Laboratory (ORNL).

Technology transfer from both institutions has been accelerated by recent significant changes in federal legislation prompted by national concern about lagging adoption of technology and growing trade deficits. Until these changes were effected, a great many well-intentioned restrictions on proprietary use of publicly funded research, and on the commercial activities of the researchers themselves, were effective barriers to commercial applications of promising new technologies.

Oak Ridge National Laboratory (ORNL) is recognized as a leader among National Laboratories in encouraging and responding to the legislative changes enabling technology transfer to the private sector. Along with Martin Marietta Energy Systems, which operates ORNL and two other federal facilities in Oak Ridge, ORNL actively seeks to license new technologies to existing businesses and has undertaken a number of internal and external measures to encourage the startup of new ventures in the local area.

Only a handful of such startups could be found in East Tennessee in the 1960s. Beginning in the mid-70's the number increased each year and by the early 80's, though the numbers were still small, the time trend was striking, when, in 1982, the newly established Tennessee Technology Foundation looked into this largely invisible area of the economy.

The foundation itself marked the intent of the state to develop the latent opportunity for economic growth from technology-based businesses. The natural place to begin was in designating the Tennessee Technology Corridor – an area stretching from the city of Oak Ridge along the Pellissippi Parkway to the University in Knoxville and beyond to the airport. That designation provided not just a physical focus but a conceptual focus – a shared vision of what could happen.

Perhaps the single most important factor in accelerating or changing the direction of economic growth in an area is such a shared vision, and in the last few years a number of important pieces of the support infrastructures have begun to fall rapidly into place in East Tennessee. A venture club was formed in 1984 to bring together entrepreneurs, investors and professionals with specialized skills to encourage new ventures and strengthen existing ones. There are now four startup incubators in the area, one with a seed capital fund. Several local companies have received substantial venture capital investments. One of these, Lipogen, Inc. was funded as a pre-startup because a special relationship has been established between the University and Venture First, a regional venture capital fund. It is not just the specialized infrastructure that has developed: the rate of technology-based business formations has been startling, and more than 150 such ventures have been identified in the Oak Ridge-Knoxville area.

Despite the striking growth of these technology-based companies, the kind of leading edge developments that go on in national laboratories, and the basic science of university research laboratories is not always good commercial material. Nor do successful ventures follow automatically from startups. Successfully identifying opportunities and developing them requires hours of work that creative MBA students can contribute.

High-Tech Market Opportunity Analysis

The need of the Oak Ridge National Laboratory for market assessment, the growing number of local spinoff companies, and The University of Tennessee's expertise in Market Opportunity Analysis have created a unique opportunity for students in the MBA Venture Analysis program.

First-year student Ed Foote is a case in point. Ed, a civil engineer working in Corning, New York, decided to come to The University of Tennessee and the MBA New Venture program for two reasons: he was interested in continuing his work in energy programs and economic development, and he recognized the National Laboratory and the Tennessee Valley Authority, headquartered in Knoxville, as natural places to continue that research.

Secondly, Ed had a previous venture experience that he found very rewarding. In parallel with his engineering job, Ed became a partner in a retail business specializing in sporting equipment. Sales doubled after he instituted a profit center approach to analyzing sales and then designed new selling programs.

Ed is one of seven first-and second-year students who are employed on projects at Oak Ridge National Laboratory under the supervision of Professor Ernie Cadotte. The majority of these projects are with the Laboratory's Technology Transfer Office and involve market analysis.

The market-oriented tasks related to technology-transfer vary greatly, from Ed's task of compiling a data book for nickel aluminide, (an advanced ceramic alloy developed at ORNL) to Chris Anderson's investigation of industrial robotic applications for the work in artificial intelligence being carried out at the laboratory.

In the first year of her program, Jane Brewer began an ORNL internship which, as it turned out, continued for her entire two years. Because the laboratory is in the forefront of advanced materials development, there was an interest in transferring its technical achievements in advanced ceramic materials. Clearly, however, additional development, beyond the authorized funding for early stage development needed to be done before commercial applications were feasible.

Mark Gessler, Lowell Smith, President, and Woody Erwin, Controller, (l to r) of Lipogen, Inc., discuss the progress of one of the company's immunodiagnostic assays under development.

Jane had no prior exposure to the "high-tech" world but, working with the scientists on the technical aspects, she undertook a survey of 82 large corporations which were producers or users of advanced ceramics. Jane's survey was a key piece in the formation of CAMDEC, Inc. (Ceramics Advanced Manufacturing Development and Engineering Center). CAMDEC, intended to bridge the development gap between basic research and commercialization of advanced ceramics, will be located in the Oak Ridge-Knoxville area and will perform both proprietary and joint process development for the consortium of U.S. companies which sponsor it.

Part-Time Venturing

The opportunity to match career objectives with part-time employment through the venture program has worked out well for Mark Gessler, who first came to Knoxville during the 1982 World's Fair. Then an undergraduate in Pennsylvania, Mark and a friend arrived with the intent of starting a business during the World's Fair that would launch them on a business career, if not make them rich!

They settled on retailing painters' caps from a street stall, but quickly discovered that the market opportunity lay in wholesaling to vendors around the Fair site. The summer was a rousing financial success in terms of a summer job, but in Mark's words, "We didn't make enough money to drop out of school and retire."

Venture finance, specifically working with a venture capital fund, is Mark's eventual career objective. Thus the opportunity to work with Lipogen, Inc. seemed ideal. Lipogen, a two-year old biotechnology company, is the product of research conducted by Professor Leaf Huang in the University's Biochemistry Department and the help of Otto Wheeley of Venture First Associates. The company is developing proprietary immunodiagnostic tests for hospital laboratories and large regional reference laboratories. The technology involves liposomes which can be used to encapsulate a variety of substances, including enzymes and therapeutic drugs.

Since the company is still small, Mark has been able to get involved with all the financial and marketing aspects. He works directly with President Lowell Smith, a former DuPont executive, and Controller Woody Erwin (Erwin is a 1975 MBA graduate of U.T. who, before he made his way into the venture environment, worked first for Bethlehem Steel, then with an established Knoxville company during the period of their initial public offering.)

Mark describes the opportunity and the technology as "one of the hottest areas to work in right now. This is exactly why I am here. I wanted to be involved with an emerging technology business."

Mutual Benefits for Students and Companies

Venture class field projects are another opportunity for students to become immersed in the venture environment. Projects with local companies are selected with the intent of providing a valuable end product to the company while the student teams practice methods they learn in the classroom in a setting that exposes them to the limitations as well as the promise of young companies.

Both the Venture Finance and Market Opportunity Analysis courses require field projects. Students in this year's courses experienced a range of challenges that included a venture-financed medical diagnostics company, a small software company and an advanced ceramic materials company.

Not every ambitious young venture has as well-ordered a development path as Computer Technology and Imaging (CTI). This three-year-old company is a spin-off of EG&G's ORTEC subsidiary in Oak Ridge. CTI is the major supplier of Positron Emission Tomography imaging equipment to medical markets.

CTI confronted the technical challenge of designing the scanning device in the most economical way and then took on the task of reducing the size and price of the cylotron needed for the system. CTI reduced the expected cost of the device from \$5 million to \$2

. . . To work with individual companies and . . . be part of the infrastructure supporting the growing momentum of venture development in Tennessee is an opportunity to impact economic opportunity in a significant and permanent way.

million, greatly enlarging the projected market. The strategy will continue to be one of reducing prices and complexity through technical improvements.

The company formed a joint venture with Siemen's Corporation in 1985 which provided both early-stage financing and distribution arrangements. Terry Douglass, founder and President of CTI, decided that a student project might involve CTI's future possibilities. Thus, estimating the value of the company seemed to be an ideal project.

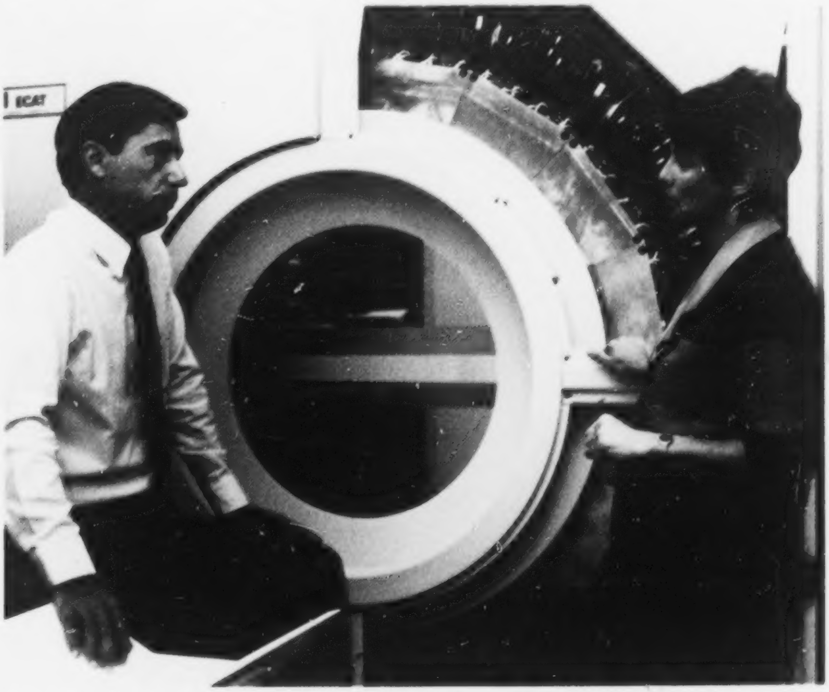
Using several different methods, students developed their own system and prepared a report providing a range of valuations and the underlying assumptions. Mr. Douglass has used these data as a basis for discussion with the financial community.

It was the right kind of educational experience for the students as well. In the words of one student: "I am convinced a company can have any value you want it to based on what assumptions you want to use . . . Of course, in a deal, the real trick is knowing what assumptions the other guy can't reasonably dismiss!"

American Matrix, a Knoxville company which grew out of research work at Oak Ridge National Laboratory, has developed silicon whiskers and silicon platelets and the production processes for producing them in quantity. These reinforcing fibers will be used for overcoming the classic shortcoming of ceramic materials – brittleness. The eventual market for reinforced ceramics is generally agreed to be in the hundreds of billions of dollars, and these materials are expected to replace traditional alloys in virtually hundreds of applications.

These uses are mostly unproven possibilities, though. In working with American Matrix, marketing students faced the fundamental challenge that comes with emerging technology companies: "Who can benefit most from this product, and what specifications must this product meet to provide a significant advantage over competing materials?" The three-part report prepared for American Matrix identified the most promising type of reinforced material to market, the most promising customers, a strategy for market entry and a market forecast.

Clearly the students are not the only beneficiaries of these field projects. Projects are selected on the basis of their value to the company and the companies benefit as well. But the venture program's benefits don't stop there. In the case of a state-funded university, there is a special obligation to contribute to the well-being of the state. The ability to work with individual companies and to part of the infrastructure supporting the growing momentum of venture development in Tennessee is an opportunity to impact economic opportunity in a significant and permanent way.



Terry Douglas (l), President of Computer Technology and Imaging, describes the company's ECAT medical imaging technology to Patricia D. Postma, Director of the MBA Center of Excellence for New Venture Analysis.

Oak Ridge National Laboratory

In the early days of World War II the three large federal complexes in Oak Ridge conducted research and development activities in utmost secrecy – even to most of the 40,000 operating force employed there at its peak.

With the end of the War, Oak Ridge National Laboratory (ORNL) became a world leader in research related to nuclear energy, including the safe design and operation of nuclear power plants.

Safe use of nuclear energy leads to a vast range of activities. For example, by the early 1950s health scientists at ORNL pioneered the studies of ecological systems that we now regard as essential in studying the environment. The know-how and the instruments developed by the laboratory's engineers and computer scientists to monitor and control nuclear power operations include sophisticated means of detecting, measuring and reporting noise, temperature changes, vibration, moisture, brittleness, corrosion and countless other aspects of operating processes.

The 5,000 employees of ORNL include more than 900 Ph.D.'s in a broad variety of technical fields. The know-how of these scientists, along with hundreds of engineers, computer specialists and technicians is applicable to far more than just nuclear energy, however. As the problems facing the country have changed from energy production to energy crisis to energy glut to global competition, the roles and priorities of the Department of Energy have changed and the mission of ORNL has broadened enormously.

The $500 million budget for FY '87 supports work as diverse as robotics and intelligent systems, explosive detection methods, efficient use of hypercube computers, development of a scanning-tunneling electron microscope for studying the microstructure of biological systems, coal conversion and bioprocessing, protein engineering, superconducting magnets, SDI optics and a wide variety of waste management technologies.

Aside from its expertise in nuclear energy, ORNL may be best known for its leadership in advanced materials. This work includes development of improved materials for space missions, high performance alloys, fiber reinforced ceramic composites and superconducting ceramics. A new facility, the High Temperature Materials Laboratory, houses laboratories and unique special equipment for high-temperature materials research by ORNL staff but will also host researchers from other national laboratories, private industry and universities.

Interaction with Universities

ORNL interacts with the country's universities through a number of formal and informal programs. Opportunities are provided for undergraduates, postgraduates and faculty to engage in research and receive advanced training. More than 950 university based guests (and 700 other guests) participated with ORNL during the current fiscal year.

A continuing and close relationship exists between ORNL and The University of Tennessee. There are a number of formal, long-standing joint graduate programs, with new ones now being developed in biotechnology, measurement, and control engineering. As part of the State of Tennessee Center of Excellence Science Alliance, more than 30 nationally renowned scientists and engineers will receive joint appointments as Distinguished Scientists by 1990. This innovative Distinguished Scientist program is jointly funded by the state of Tennessee and the Department of Energy.

The opportunities for students in the MBA Center of Excellence for New Venture Analysis are the newest of these mutually beneficial programs. The significant efforts underway at ORNL to enhance our global competitiveness by transferring new technologies to the private sector for commercialization provide a unique opportunity for MBA students to be involved in market opportunity analysis from the ground up. ☐

Venture First: Coming Home to Tennessee

When Otto Wheeley, Deputy Chairman of Koppers Company, encouraged Koppers to establish a corporate venture capital fund and became President of Kopvenco, he did not know it would lead him back home to Tennessee. It has, though, and he is still doing what he likes best – developing new companies by investing venture funds and management skills.

Mr. Wheeley, a Tennessean by birth and a University of Tennessee graduate in chemical engineering, began his career with Koppers Company in 1943. The succession of his responsibilities evolved into Vice President of Marketing; Senior Vice President responsible for Marketing, International, Long-Range Planning and Mergers and Acquisitions; Deputy Chairman of Koppers; and President and Chief Executive Officer of Kopvenco, the venture capital subsidiary of Koppers.

Mr. Wheeley established and managed Kopvenco. Kopvenco was one of the first corporate venture funds established and has been the model for several others. Although Kopvenco targeted investments only in technologies of strategic interest to Koppers, it has been strikingly successful with its investments in genetic engineering, advanced materials, communications and agriculture.

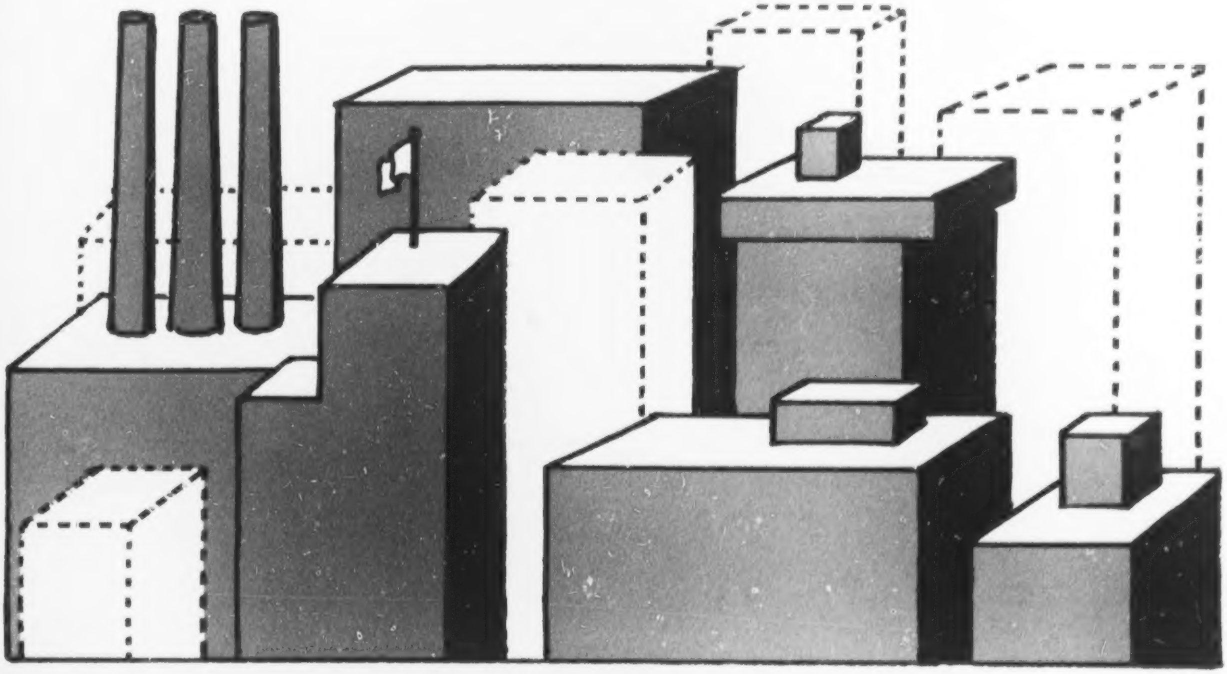
Mr. Wheeley was convinced that there is a great deal of unrealized potential for successful business ventures in Tennessee, especially the Knoxville-Oak Ridge area where he had led a proposed development for Koppers Company. In 1984, he joined Campbell Cawood and Douglass Mullins to form Venture First Associates in Winston-Salem, North Carolina.

Venture First raised an initial fund of $13,000,000 and has recently closed a second fund of $36,000.00. One unusual aspect of Venture First is its interest in early stage companies. Venture First committed to that interest in the form of a special arrangement with the University of Tennessee Research Corporation. The UTRC is an entity formed solely for the purpose of assisting U.T. researchers in patenting and exploring commercialization of their research developments. Mr. Wheeley believes the University's policy on sharing the rewards from research developments is one of the most favorable in the country to faculty, and it was an environment he liked. He agreed to work with the UTRC on a regular basis, assessing the commercial potential of research results.

The first payoff for the University came quickly. Venture First Associates decided to invest in Lipogen, Inc. before it had a business plan – indeed, before it had an entrepreneur. Mr. Wheeley helped develop the initial plan and helped recruit its C.E.O. Lipogen, Inc., the University, and Leaf Huang, the biochemist who developed the proprietary immunoassay technology involved, agreed on an arrangement allowing Dr. Huang to continue as a full-time faculty member while continuing his research. Rights to commercialize that research belong to Lipogen, Inc. but both the University and Dr. Huang will share in the rewards.

In its first two years, Venture First has led venture capital syndications for ten companies in the Southeast. The companies are located as far away as Florida and Washington, D.C., but four of the ten are in Tennessee. In the past two years the total amount of money invested in just these four Tennessee companies totals nearly $30,000,000. Venture First expects to invest in two to four more Tennessee companies in the near future.

With these types of foundations already in place for new ventures, regional entrepreneurs have much to look forward to.



Entries and Exits of Firms in the Tennessee Economy: Foundations for Research

John W. Mayo

Markets in the United States, typically thought to emulate the competitive model first articulated by Adam Smith some 200 years ago, generally exhibit several desirable attributes. Economists tend to favor competitive markets for their efficiency properties, while others tend to favor them for their ability to decentralize economic power. Regardless of the source of this affection for competition, however, the entry and exit process of firms in the economy can be seen as an absolutely essential linchpin to the realization of the desirable attributes of competitive markets.

Yet despite the critical role that entry and exit plays in the operation of competition, the study of the entry and exit process to date has been very limited.

Recognition of a void in our understanding of the entry and exit process has led to a major research effort at the Center for Business and Economic Research in the College of Business Administration at The University of Tennessee, Knoxville. This research, which began in late 1986, is designed to shed light on the variety of important economic and policy questions that surround the entry and exit of Tennessee firms.

The primary reason that this important characteristic of markets has been given only passing attention has been the historic lack of suitable data. The few studies that do exist have almost universally used data collected by the U.S. Census Bureau which are gathered and published only at five-year intervals. Other sources of entry and exit data that have recently emerged include Dun and Bradstreet and the Small Business Administration's Small Business Data Base. Neither of these data sets has yet received substantial attention. As a result, very little is known about the economic or policy determinants of entry and exit at either the state or national level.

Looking for Answers

In the absence of reliable data and analysis on the entry and exit process, a number of important questions emerge for which satisfactory answers do not yet exist:

- What are the economic and policy determinants of firm creation (entry)?
- Do these determinants vary from industry to industry? By geographic region? By condition of the business cycle?
- What is the *relative* importance of the various policy determinants of firm entry?
- Given some level of firm creation, do state economic policies affect the probability of firm survival? If so, which state policies, and by how much?
- What are the determinants of new firm longevity? Do these determinants include state policy variables? If so, to what extent might the lives of new firms be prolonged as a result of judicious state economic policy? How

might these "duration" policies ultimately feed back to affect the firm creation process?

- Which, if any, state economic policies have contributed to the exit of new or older firms? Should these policies be eliminated for fear of excessive intervention in market forces, or can they conveniently be altered to increase the "survivability" of Tennessee firms?
- What does the growth path for new firms look like? Is this growth path in any way affected by state policies?

Analyzing the Data

Given the relative paucity of both data and analysis, two principal tasks were identified at the outset of CBER's research. First, it was necessary to construct a reliable data set on firm entries and exits. A thorough search of both existing data and potential data sources revealed that raw data collected by the Tennessee Department of Employment Security (TDES) provided a promising opportunity to more accurately account for firm entries and exits than has heretofore been possible with any nationally-based data set. Specifically, TDES collected information on all employers who are covered by the state's unemployment insurance program. This coverage includes nearly 95,000 firms in the Tennessee economy. Data on firm entries, as well as employment and wage data, were gathered for Tennessee firms from 1972 through October 1985. Similarly, data on the exits of Tennessee firms were also collected.

A second basic task at the outset of CBER's research on entries and exits was the identification from the variety of possible areas of inquiry of a set of manageable research topics. Four principal areas for future research were identified: (1) the entry of firms; (2) the exit of firms; (3) the growth and recession of firms; and (4) the duration of firms.

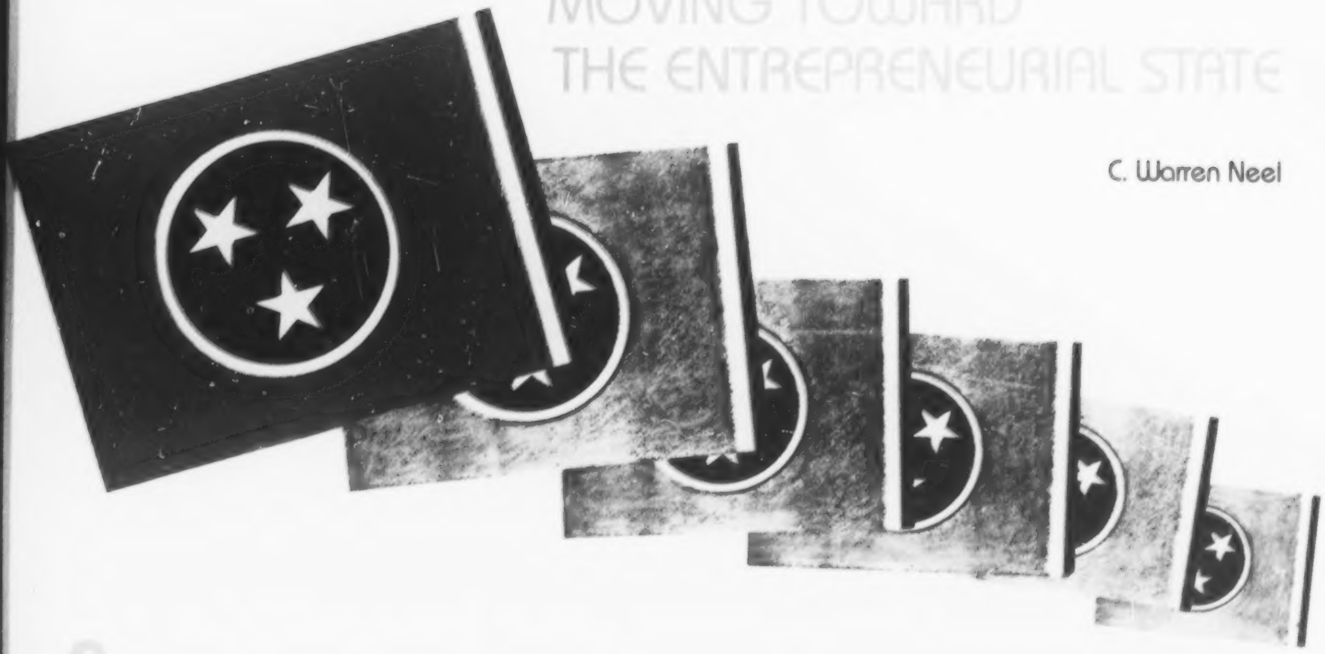
Each of these areas presents an opportunity for research that is of promising academic potential and has the prospect of attracting national recognition both through external funding and through its implications for policy development. For instance, in the policy arena, it is not clear to what extent the traditional tools of economic development are related to the goals of policymakers. Specifically, typical goals for state and national policymakers are generally couched in terms of macroeconomic indicators, e.g., unemployment, employment growth, and personal income. At the same time, however, the policy tools with which economic development is pursued have been directed at firms, (e.g., through firm recruitment) which are microeconomic entities. Knowledge gleaned from research on the determinants of firm entry will allow policymakers to target economic development policy to maximize the potential for economic growth of an industry or region. Likewise, while policymakers have traditionally focused economic development efforts on attracting entry, similar gains in economic well-being may result from policies that enhance the lives of existing firms. But only by gaining a better understanding of the determinants of firm exit can policymakers hope to successfully enhance the survival rates of extant firms. Finally, antitrust policies may be further sharpened through a clearer awareness of the causes and deterrents of firm entry and exit.

Only by gaining a better understanding of the determinants of firm exit can policymakers hope to successfully enhance the survival rate of extant firms.

The first phase of the research, **Entries and Exits of Firms in the Tennessee Economy, 1980-1985**, has recently been published by **CBER** and the Tennessee Department of Employment Security. The study represents the first of several separate analyses to describe the number of entries and exits in the Tennessee economy, the industries in which the firms are located, the geographic areas where these have occurred, and the firm sizes that have been involved. Detailed results of the study and subsequent research will be reported in the Fall **Survey**. ☐

William F. Fox, Project Director, and John W. Mayo, Research Assistant and Assistant Professor of Economics, look over the data collected on the entries and exit project.

MOVING TOWARD THE ENTREPRENEURIAL STATE



C. Warren Neel

Current research indicates that most future jobs in the U.S. will be created by small firms, and small firms are growing in number each year. Thus, evidence suggests that the entrepreneurial spirit, the driving force behind these new business ventures, is also growing. Despite this evidence, the economic development activities of many governments and local communities remain focused on attracting large firms — those that make headlines when they decide to relocate, expand existing facilities, or lay off workers. This seemingly paradoxical behavior raises some fundamental questions of the role that the public sector plays in economic development.

Can a state government be more entrepreneurial in recognition of this trend in job creation? Should the state adopt more of a partnership stance with business and assume some risk? Some would argue that the question is misplaced: government should stay out of the way. Market forces left to themselves will respond better than any governmental involvement. After all, government is a monopoly, and such power practiced in the form of accompanying policies would be detrimental to a free functioning economy.

Yet government is already involved: from building new roads to creating better education systems to the collection of a plethora of taxes. So the question is not, "Should government be involved?" but rather what general policy guidelines might the government entity follow in order to capture the full advantage of new job creations.

It is useful to look at some examples of how the state of Tennessee can become more entrepreneurial, with the caveat that these are only examples and are not meant to be suggested constructs of change.

Entry and Exit of Firms

A recent study commissioned by the Tennessee Department of Employment Security indicates that in 1985, over 90,000 active firms were operating in Tennessee. During that year, there were almost 12,000 new firms which typically employed 5-9 workers during the first quarter of operation. In essence, these firms created 70,800 new jobs. This job creation for the most part went unnoticed, however, while the 6,000 proposed new jobs associated with the construction of the Saturn plant made every newspaper headline in the state.

On the other hand, Employment Security data indicate that in 1985, 9,000 firms exited the economy. Again, except in the case of large firms with high numbers of laid-off workers, this exodus was not recorded in the press with bold headlines or called to the attention of policymakers. Yet, the 9,000 exiting firms took about 40,000 jobs with them.

Because of the attention given large firms, many policymakers attach far more importance to the well-capitalized big business than to those smaller firms that are creating most of the job opportunities. This is particularly true with regard to employment patterns and

In many cases where appropriate local zoning policies have not been in place, small towns have literally moved their business district . . . leaving behind not just an eroded tax base, but . . . their heritage and community pride—two elements that can contribute significantly to further business development.

shifts in the economy. Too often policymakers focus on the large firm in considering how government might stimulate job growth.

Unemployment Taxes

A case in point is the state's structure for unemployment taxes. A simplified explanation is that presently the tax rate for a firm is based upon the firm's unemployment experience and that of the industry in which the firm operates. The firm is required to adjust to a different tax table based upon a "trigger" policy designed so that when the firm is in the greatest need for husbanding its cash (the downside of the business cycle), taxes are increased. This misplaced "trigger" is but one example of a policy which is much more detrimental to the small, undercapitalized firm than to the larger, better-financed business.

Another example is the overemphasis placed on industry classification when determining a firm's tax rate and the corresponding lack of emphasis placed upon characteristics of the individual firm. The result is that the unemployment insurance fund of the state often subsidizes many sectors of the economy and penalizes others.

A related economic development policy is that which defines the worker who qualifies for unemployment benefits. Presently, among other requirements, the worker must be completely laid off to qualify, because there is no policy allowing a worker to draw partial unemployment benefits equal to the percentage of layoff. What if such a policy did exist? Perhaps the firm of 50 employees faced with the prospect of laying off 25 workers would simply lay off all 50 half-time rather than completely idle half its labor force. Certainly the economic impact of the layoff would be spread more broadly in a community, and further, a small firm would probably be better protected from losing its trained workforce, a workforce that would be difficult to replace, given limited capital.

Labor Policy Options

Then there are labor policy options that relate to the $60 million that flows into the state of Tennessee in the form of the Job Training Partnership Act. Are the present policies which govern the use of those funds being used so as to assure maximum economic development, particularly with regard to the small firm? Potential policy changes do not relate only to labor. For example, day-care policies that not only assure quality care for children but foster economic growth could also offer state government an opportunity to be more entrepreneurial. Maybe a more creative way to look at the issue of the displaced worker is to focus on the labor expansion needs of existing industry. The objective of putting the displaced worker back in a job would remain, but the labor expansion needs of existing firms would receive equal policy attention. Presently the policy focus is only on the displaced worker, with little emphasis on the firm.

The use of block grants and other flow-through funds from the federal government offers policy opportunities that relate to fostering economic development. Some of these grants, for example, go toward revitalizing cities, towns and communities. Do the present policies relate to encouraging small business or are they dysfunctional?

Considering the Entrepreneurial Issue

Even when the state plans a major undertaking, the entrepreneurial issue is an appropriate one to consider. The major state highway program passed during 1986, for example, provides not just the economic benefit of moving workers as well as goods to market, but also affords an opportunity for cooperation with local zoning policy bodies on access roads. It is easy to realize the importance of this potential policy by noting the effect of the interstate highways on numerous small Tennessee towns. In many cases where appropriate local zoning policies have not been in place, the small towns have literally moved their business district (usually comprised of small businesses), leaving behind not just an eroded tax base, but most of all, their heritage and community pride — two elements that can contribute significantly to further business development.

The administering of various state funds through more entrepreneurial policy making is not the only means at a state's disposal to stimulate job growth. Often we forget that the various state agencies and boards have other fixed assets that could possibly be deployed in a more economically supportive fashion. Many agencies, for example, have land and buildings that can assist economic development of a city, town or region. Where they are placed, how the land is used and a host of other actions could significantly improve the future job prospects of the state.

Policies that foster entrepreneurship or policies that reflect the prospect that most future jobs in Tennessee will be created by small firms do not suggest that state government should interpret its function as that of an entrepreneur with associated risk-taking. Rather, state government should see those elements which relate it to the business community as providing an enormous opportunity to assist in the creation of a better economic future for all Tennesseans.

Furthermore, the reshaping of those policies with a focus on how future job growth will occur should not be the domain of one department in state government. Rather, policies that foster the birth of new firms and reduce the barriers that impede the continuation of existing firms should be within the policy purview of every state agency. If the state's leaders can articulate the necessity for having entrepreneurial values, and those values are accepted by the policymakers and interpreters within the various agencies, job growth in the future will be enhanced. Tennessee will take full advantage of the potential that the growing entrepreneurial spirit offers to future prosperity. ☐

ECONOMIC RESEARCH FOR MORE ENTREPRENEURIAL POLICIES

Much of the research being done by faculty at UTK's College of Business Administration should be of value to economic developers and state policymakers. For example, Drs. Henry Herzog and Alan Schlottmann have recently completed a study of high technology business locations as a function of the presence of an all-time high technology workforce.

"We can discover much about the location of their workers. There are strong ties between the geographic location of high-tech firms and their ability to secure the highly skilled work force they need." Part of the task of economic development is finding out how to attract high-technology workers. When compared to other workers, workers in high-technology occupations demonstrate higher levels of both past and present geographic mobility. In other words, they are more willing to relocate. However, once the decision to move has been made, high-technology workers consider alternative destination attributes in the same way as other workers.

The research used multivariate regression analysis to analyze secondary data on both worker and place characteristics. *No* evidence is found to support the belief that high-technology workers are more sensitive than other workers to characteristics such as climate, home prices, local taxes, quality of schools and academic institutions, or accessibility to cultural amenities and recreation. Herzog and Schlottmann's work does not say that these matters are unimportant to high-tech workers – only that high-technology workers treat them much the same as any other workers.

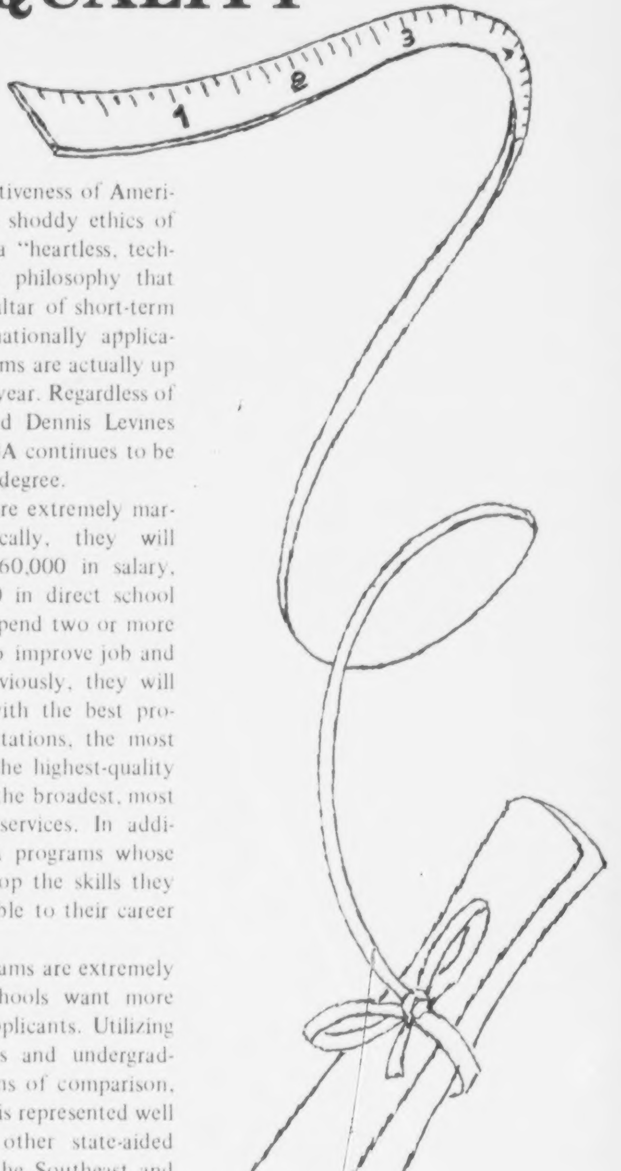
Based on this research, it would appear that state developers need not incur the expenses of developing promotional programs tailored exclusively to high-tech workers. More general promotional efforts are likely to be as effective and much more cost-efficient. Details of this study can be found in the **Journal of Regional Science** (Vol. 26, No. 3, August, 1986).

In another stream of economic development research, Don P. Clark, Associate Professor of Economics, is analyzing how the Tokyo Round tariff reductions will affect the use of Foreign Trade Zones (FTZs) to attract high-technology manufacturers. Foreign goods imported into an approved FTZ are not subjected to any custom duties (tariffs) until they are shipped out of the area. Components shipped into the FTZ can be assembled to the stage of development that minimizes total tariffs due. This makes an FTZ an attractive location for high-technology manufacturers, where there are often significant cost-savings to be realized by having tariffs assessed against a finished item rather than against all its individual components.

Zone-based manufacturing in Tennessee is now a part of the economies of Memphis, Nashville and Smyrna. The Tennessee Technology Foundation is working to establish another FTZ in the Knoxville-Oak Ridge area. However, Dr. Clark believes recent changes in the tariff structure have reduced the attractiveness of FTZs. Tariff reductions were conducted using a harmonization tariff-cutting formula which lowered the dispersion of tariff rates on final products and on imported components and reduced the potential cost-savings of FTZs. His research seeks to determine whether or not this is the case and will provide policy guidelines for the best use of FTZs in light of the recent tariff changes.

Dr. Clark's research is funded in part by the MBA Center of Excellence for New Venture Analysis.

THE MBA PROGRAM: YARDSTICK FOR QUALITY



Roger L. Jenkins

The MBA program is the yardstick by which many constituencies measure the quality of any college of business. In addition, for a school to build a large influential alumni presence in the business community, the MBA program offers the greatest combination of level and mass. To keep the MBA Program at The University of Tennessee, Knoxville, in the forefront of southeastern public institutions in graduate management education, UTK in 1985 began an extensive evaluation process to assess the strengths and weaknesses of the program in light of national trends in graduate management education. From this evaluation process, a series of changes is being implemented to maintain and enhance the reputation of the UTK MBA.

MBA Arena

A perspective of the current MBA arena is essential to understanding the recent developments in UTK's program. Everyone is familiar with the MBA program at schools such as Harvard, Stanford, and Wharton, all of which enjoy international reputations. It logically follows that the schools which recruit and place MBA students primarily on a national/regional basis would have a slightly different MBA program. Schools such as UCLA, Indiana University, and North Carolina at Chapel Hill would fall in this category.

Operating below this level is a large group of schools striving to achieve or maintain regional domination.

Reading recent articles in the **Wall Street Journal, Business Week** or any other business magazine, one might sense that these MBA programs are in trouble. In the business press, MBAs are held responsible for the decreasing international competitiveness of American industry, for the shoddy ethics of Wall Street, and for a "heartless, technocratic management philosophy that sacrifices all on the altar of short-term profits." However, nationally applications for MBA programs are actually up 20 percent from last year. Regardless of the Ivan Boeskys and Dennis Levines of this world, the MBA continues to be an extremely popular degree.

MBA prospects are extremely market oriented. Typically, they will forgo $40,000 to $60,000 in salary, incur up to $10,000 in direct school costs per year, and spend two or more years of their lives to improve job and career prospects. Obviously, they will seek those schools with the best programs, the best reputations, the most financial assistance, the highest-quality peer candidates, and the broadest, most effective placement services. In addition, they seek MBA programs whose curriculum can develop the skills they feel are truly applicable to their career concerns.

Since MBA programs are extremely competitive most schools want more and higher-quality applicants. Utilizing average GMAT scores and undergraduate GPAs as a means of comparison, UTK's MBA program is represented well when compared to other state-aided universities both in the Southeast and nationally.

The effects of this competitiveness are being felt by programs of all sizes. One "big ten" school was recently operating at about 50 percent of its targeted scale. Last year, it processed more than 11,000 contacts to offer admittance to 350 students and received only 113 acceptances (of which 30 percent were nonnative). Another school hosted its nine top applicants for a red-carpet weekend with faculty, alumni, and business leaders. Full financial assistance resulted in the top three applicants enrolling in the program; partial financial assistance attracted all but one of the remaining. This level of competition makes it difficult for emerging programs to grow while maintaining or increasing quality.

Seemingly, a high level of innovation exists among MBA programs. Undoubtedly, program competition simulates much of it. Variations exist among continual formats related to case vs. traditional course formats; traditional vs. modular course lengths; applied vs. discipline theory orientations; work experience requirements, etc. This phenomenon causes the MBA arena to be even more dynamic.

UTK MBA Program Strategy

In light of developments in the MBA arena, there was a decision on the part of the U.T. College of Business Administration that the MBA Program should concentrate on promoting a generalist degree while establishing new specific market niches through concentrations emphasizing unique college strengths. Business organizations need both generalists and specialists, and in this rapidly changing business world, organizations are becoming smaller and more responsive. The decison-making unit in business is smaller and, therefore, more general managers are needed. But these units also must be more scientific and create more specialists, too. It is imperative to create better ways of connecting and synthesizing the general and the specialized. By focusing on the development of new concentrations such as Controllership and Venture Management while promoting already strong and unique concentrations such as Transportation and Logistics, U.T. hopes to accomplish this objective and give the MBA Program a stronger national reputation.

The creation of an MBA Center of Excellence within the College of Business Administration was an important step in developing a market niche. Of paramount importance to the MBA Program is the new concentration in Venture Management, which is a result of the Center's work. This unique concentration has already enabled the MBA Program to attract the interest of students from all over the United States and Canada.

Innovative Features of the Program

Several innovative features of the UTK program have been implemented to keep the UTK MBA a dominant contender in the Southeast while enabling the program to achieve national recognition.

Internship: The requirement of summer internship for all full-time students is relatively unique to both UTK graduate programs and other MBA programs. The philosophy behind this requirement is to provide students with some actual business experience as a part of their graduate education. Students are responsible for securing their own internships, but the Office of Graduate Business Programs assists in this process. A sampling of companies participating in the 1986-87 Internship Program includes the following:

American Critical Care
American Hospital Supply Company
Bojangles
Chromalox Instrument & Control
Detroit Pistons
Duke Power
Eric Ericson & Associates
Ernst & Whinney
Frito-Lay
Genentech
General Motors, Buick Division
Holiday Corporation
Humana
Inspiration Coal
Martin Marietta Energy Systems, Inc.
Northern Telecom
Procter and Gamble
Ryder Truck Rental, Inc.
Signature Health Alliance
Siemens
Texas Instruments, Inc.

New Concentrations: Two new concentrations added to the program during the 1986-1987 academic year were specifically designed to provide the UTK MBA Program with niches in which to differentiate itself from more traditional programs, as well as in response to trends in the business environment.

Since the University offers a Master of Accountancy program for students with undergraduate degrees in accounting, a concentration in Controllership was created for MBA students who would not have had prior exposure to accounting. This concentration is comprised of four specific courses. In addition to a course in budgetary planning and control and one in data base design, two courses have been designed specifically for MBA students:

1. Financial Accounting Issues in Business — a comprehensive investigation of various financial reporting and auditing issues
2. Taxation for Business Decisions — a conceptual foundation and analysis of current issues in taxation impacting on the use and management of financial and investment information

The Venture Management concentration is an interdepartmental program designed to provide students with the analytical tools to new ventures in entrepreneurship. Almost all programs at other universities offering instruction in this area rely on a mixture of standard courses to provide the in-depth training; UTK's concentration is unique in that three distinct courses have been created especially for the concentration:

1. Financial and Legal Aspects of New Ventures — an in-depth treatment of the financial issues associated with the formation, control, and long-term planning of a new enterprise
2. Analyzing Market Opportunities for New Ventures — a practical framework for new venture analysis which ties together concepts, information and procedures for market opportunity analysis
3. Strategic Planning in New Ventures — the integration of various functional disciplines and their application to general management of ventures formed both within larger corporations and independently

Lock-Step Curriculum: A lock-step curriculum (a prescribed sequencing of courses which all students adhere to) was instituted in 1985 to insure integration and continuity in course sequencing.

The development of a strong peer group network is an extremely important aspect of an MBA program. By engaging in the lock-step system, with students taking course in a prescribed sequence, the students have developed stronger peer groups than with the previous system. In addition, for the first four quarters in the program, students are assigned to groups based upon their undergraduate backgrounds and work experience. To promote synergism, each group has a mix of students from various undergraduate disciplines and varying amounts and types of work experience. The groups are realigned each quarter to give each student the opportunity to get to know other groups of students.

Integration of Microcomputing: The College of Business Administration's computer integration program has been acknowledged for its outstanding design by the Academic Information Systems division of IBM and was chosen as one of four business schools (Duke, MIT, and Columbia are the others) for its Application Briefs series. Integration of microcomputers in the MBA curriculum is a top priority of the program. Two microcomputer labs opened in Fall 1985 are available for classes as well as open hours for individual work.

For the first time in Fall 1985, students attended a computer orientation prior to the start of classes. This orientation is now followed by the utilization of microcomputer technology in the courses during the student's program, giving students the opportunity to have access to this equipment throughout their graduate program.

Have We Arrived?

The placement data for our 1987 graduating MBA class as well as the statistics for our incoming MBA class for 1987 are impressive. The 1987 UTK graduates are successfully competing with graduates from the top MBA

TWO QUANTITATIVE MEASURES FOR MBA PROGRAM QUALITY IN STATE-AIDED SOUTHEASTERN UNIVERSITIES

1986 ENTERING MBA CLASS

	Mean GMAT Score*	Mean Undergraduate Cumulative GPA**
University of North Carolina	605	3.3
University of Virginia	600	3.0
University of Georgia	585	3.4
University of Florida	580	3.5
University of Tennessee	580	3.2
Virginia Polytechnic Institute and State University	552	3.09
Louisiana State University	543	3.1
University of Arkansas	541	3.16
University of Alabama	540	3.3
University of South Carolina	520	3.2
Florida State	510	3.2
University of Kentucky	500	3.2
Georgia State	480	2.8
University of Mississippi	475	2.85

*Graduate Management Admission Test
**Grade Point Avenue

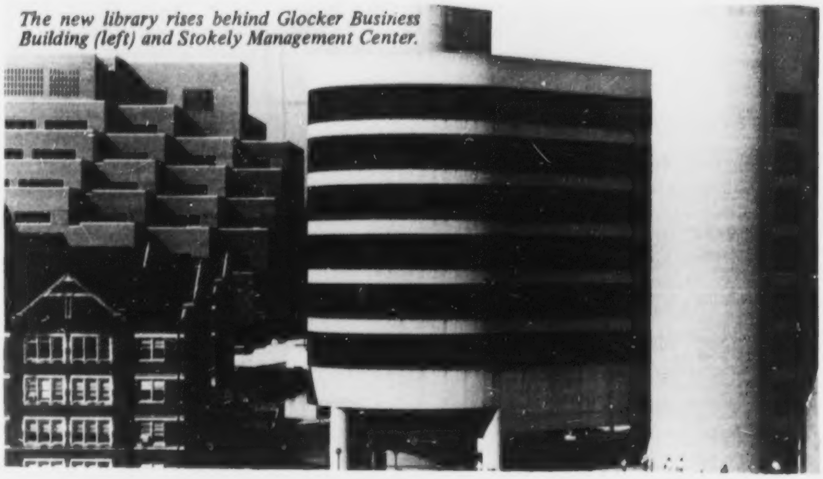
TWO QUANTITATIVE MEASURES FOR TOP MBA PROGRAMS IN STATE-AIDED UNIVERSITIES

1986 ENTERING MBA CLASS

	Mean GMAT Score*	Mean Undergraduate Cumulative GPA**
U.C. at Berkley	630	3.5
U.C.L.A.	630	3.5
University of Illinois	610	3.4
University of North Carolina	605	3.3
New York University	600	3.3
University of Texas	600	3.5
University of Virginia	600	3.0
University of Georgia	585	3.4
Indiana University	580	3.35
Ohio State University	580	3.3
University of Florida	580	3.5
University of Minnesota	580	3.3
University of Tennessee	580	3.2
University of Iowa	570	3.4
University of Maryland	570	3.1
University of Wisconsin	570	3.35
Virginia Polytechnic Institute and State University	552	3.09
Michigan State University	540	3.4

*Graduate Management Admission Test
**Grade Point Average

programs in the U.S. in corporate placement. Likewise, the University is attracting a bright, energetic group of individuals with diverse backgrounds who clearly have the potential to be the business leaders of tomorrow. While UTK has made changes to the curriculum, those involved are fully aware that to continue to develop the MBA Program's reputation will involve an ongoing evaluation process. We know we have the faculty resources and support to make for an exciting future. The UTK MBA program is well positioned for the next decade to be at the forefront of graduate management education. □


The new library rises behind Glocker Business Building (left) and Stokely Management Center.

RECOGNIZING THE ENTREPRENEURIAL SPIRIT

UTK's MBA alumni are living proof that an entrepreneurial spirit can be an important part of careers in a wide variety of business settings. Jim Gower (class of '71) brings a relentless entrepreneurial spirit to brand management at H. J. Heinz, one of the country's largest food products company.

Upon graduation Jim accepted a position in sales at American Critical Cares. Five years later, he had moved up through the ranks to become the company's Vice President of Marketing. In 1979 he became Vice President of Marketing at Genentech, one of the technology-driven companies doing R&D on recombinant DNA. It would be years before the company's first product reached the market, but in the meantime, Genentech would go public and have the greatest opening day price run-up of any initial placement offer in the history of organized financial markets. Jim is one of very few internationally recognized experts in marketing in the young field of biotechnology. "The growing emphasis on entrepreneurship in business schools is way overdue. There is just so much that managers of new ventures need to know, and the trial and error method of learning is awfully expensive and time-consuming. I fully support UT's efforts toward better educating venture managers."

Recently, **Business Week** identified Barbara Behrman as one of the nation's new corps of "fast-track kids," young managers who, by displaying strong entrepreneurial talents, are said to be redefining corporate management. Barbara was also named as one of the up-and-coming "people to watch" in a recent issue of **Fortune** magazine. Barbara took a marketing position with Proctor and Gamble upon graduation. After two years, she moved to H. J. Heinz Company, where she helped launch the company's line of instant baby foods. From there she was quickly promoted to product manager of Heinz's ketchup, their flagship product. Barbara is the first female ever to hold this key managerial position in Heinz.

While at U.T., Barbara was a graduate assistant for Richard Reizenstein, now Associate Dean of Undergraduate Programs in the College of Business Administration. Dr. Reizenstein has followed Barbara's career closely and has often provided her with counsel. "Barbara's tremendous success is due to her ability to combine hard work and talent with great creativity and an undying sense of humor."

Lynn Youngs (class of '85) holds a key position in the small group of managers working at Perceptics, one of the most promising technology-based new ventures to be formed out of the Oak Ridge National Laboratory/University of Tennessee research and development effort.

Lynn received his degree while working part-time as an accountant at ALCOA, the giant aluminum company. Upon graduation, he accepted a full-time position in finance with ALCOA. Lynn looks back on his days at ALCOA as excellent training, but he feels much more at home in his current position. Lynn is the Vice President of Finance at Perceptics, a firm specializing in computer vision and machine intelligence. Perceptics got its start in 1980 when scientists from The University of Tennessee's Pattern Analysis Laboratory received a large Department of Transportation research contract to develop a micro computer-based license-plate reader. From there, the company has diversified into various areas of machine intelligence. In 1985, only five years after the corporation was formed, Westinghouse acquired 38 percent of the company for $3.5 million. Since he is headquartered near Knoxville, Lynn has been able to stay in very close contact with his alma mater. "The Venture Management concentration is an excellent addition to an already strong MBA program. It fills a growing need for a different type of manager."

ANALYZING NEW VENTURES:

Current Research in the College of Business Administration

In its quest to understand entrepreneurism, The UTK College of Business Administration (CBA) begins at home, encouraging faculty in new ventures and supporting research and innovative projects. Through this support, many CBA professors have been afforded opportunities to initiate new ideas or expand on work already in progress.

- **The Market Place**

In its promotional literature describing the tremendous advance business schools have made in utilizing microcomputers, IBM has highlighted programs at Columbia, Duke, MIT, and The University of Tennessee. One of the reasons UTK's use of micros is so highly regarded is that the CBA faculty has made an extensive effort to fully integrate computer usage into the learning process.

One of the most ambitious contributions has been made by **Ernest Cadotte**, Associate Professor in the Marketing and Transportation Department. Dr. Cadotte has led a team of computer programmers in the development of "Market Place," a sophisticated computerized business simulation. Through the computer, teams of students raise capital, design products, establish production operations, develop, execute and revise marketing strategies, negotiate with channel partners, and struggle with one another in a competitive economy. The simulation culminates with the teams "selling" their businesses to a visiting panel of financial experts.

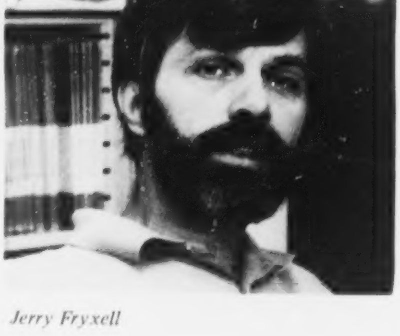
Dr. Cadotte has made numerous presentations promoting Market Place around the nation. "What gets people excited about this new generation of computer simulation," says Dr. Cadotte, "is the tremendous breadth of business considerations we are now covering. This makes the simulation much more realistic than many earlier generation packages."

Dr. Cadotte's work is funded in part by the MBA Center of Excellence for New Venture Analysis.

- **Corporate Culture**

Jerry Fryxell of the Management Department contends that corporate culture plays an important role in motivating and controlling the innovation process. "Culture is of considerable interest, since larger firms are generally considered to have a 'critical mass' of resources and talent for innovation, yet are impaired by encroaching values that are not conducive to innovation." In response to the importance of this problem, numerous books have prescribed desirable norms and values in these settings; however, up to the present there has been very little empirical research that has tested the validity of popularized notions about the culture of innovation.

Professor Fryxell's research, funded in part by the MBA Center of Excellence for New Venture Analysis, is attempting to integrate knowledge about culture and innovation. At the same time, it is intended to move the field in the direction of empirical research through an application of recent statistical advancement of the measurement of values.



Jerry Fryxell

- **Analyzing Corporate Ventures**

To gain practical research experience in analyzing corporate ventures, five doctoral students in the Management Department have recently completed their required course in Research Methodologies. From cooperative class research projects analyzing internal corporate ventures, a number of papers have resulted:

(1) **Mary Spann** and **Linda Lerner** will be presenting a paper entitled "Resource Sharing, Top Management Involvement, and Competitive Advantage: An Analysis of Their Relationships in New Corporate Ventures" at the 1987 National Academy of Management Meeting in New Orleans.

(2) At the same meeting, **Mary Kay Sullivan** and **Harlan Carothers** will present their work, "Diversity in the Skills of Corporate Venture Management Teams: An Analysis of Its Sources and Its Impact on Financial Performance."

(3) **Bob Wilson** presented his work from the class at the 1987 Conference on Frontiers of Research in Entrepreneurship in Los Angeles. The paper, prepared in cooperation with Professor Bill Gartner of Georgetown University, was entitled "Market Entry Order and Its Relationship to Competitive Advantage and Performance: A Study of New Corporate Ventures."

"I am very proud of the reception these student projects have received in the academic community," said **Alex Miller**, the course's professor. "The success has convinced me to offer the

New venture managers have a critical strategic decision to make. They can force transactions or relationships with a large number of suppliers and customers, or they can become dependent on just a few major stakeholders.

course again following a similar format." Research projects in the next class will concern the interplay of new market entries and the competitive responses of existing firms.

- **The Whole Entrepreneur**

"How, why and when did the concepts of entrepreneurship as it is understood today come into being?" To answer that fundamental question, **Dr. Hans E. Jensen** of the Department of Economics has been spending his summers since 1982 in the colleges and libraries of Cambridge University, in England, poring over the original works of Adam Smith, John Stuart Mill, A. Marshall, Keynes, and Schumpeter.

Hans Jensen

Inasmuch as these economists viewed the role of the entrepreneur from different perspectives, each of them envisioned and emphasized only one aspect of the entrepreneurial function. When, however, Jensen combined these partial images, there emerged from his study a "composite picture of the whole entrepreneur." It is Jensen's hypothesis that present-day students of entrepreneurship are influenced by this picture when they undertake their own studies of entrepreneurship and new ventures.

Dr. Jensen's research is funded in part by the **MBA** Center of Excellence for New Venture Analysis.

- **Innovative Research Program**

"New venture managers have a critical strategic decision to make," says **Roger Hudson**, Assistant Professor of Management. "They can forge transactions or relationships with a large number of suppliers and customers, or they can become dependent on just a few major stakeholders." Over the past three years, the young software firms Hudson has been studying have pursued both types of strategies. "The businesses that adopted a high dependency strategy often reported very high performance for several years but then experienced a dramatic reversal, or even a catastrophe leading to bankruptcy, when a critical transaction collapsed.

Businesses following a low-dependency strategy tended to earn only moderate performance on a year-to-year basis, but none had catastrophes when one of their relationships collapsed."

According to Hudson, traditional generic strategies have not been very helpful in explaining the performance of startup businesses. "Studying the nature of the set of transactions in which firms engage and the processes used for negotiating and executing the transactions holds great potential for helping to explain the success and failure of new ventures."

Hudson's research is part of the Minnesota Innovation Research Program, is an ongoing multidiscipline research program of the University of Minnesota, where Hudson was a graduate student. He has co-authored several works from that project, including "Designing New Business Startups: Entrepreneurial, Organizational, and Ecological Considerations," which was recently published in the **Journal of Management**.

Hudson's position in the Management Department is funded by the **MBA** Center of Excellence for New Venture Analysis.

Roger Hudson

With the current emphasis on entrepreneurial education and the support generated for entrepreneurship at the 1986 White House Conference on Small Business, research projects like those mentioned above represent a stimulating force in the nation's business schools. Through federal, state and university programs, startup ventures can help improve numerous aspects of our quality of life, but cooperation among government, education and business is imperative to achieve the promise new ventures can achieve. ☐

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